

ARCHITECTURE

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Interior Architecture of To-day

By Earl H. Reed, Jr.

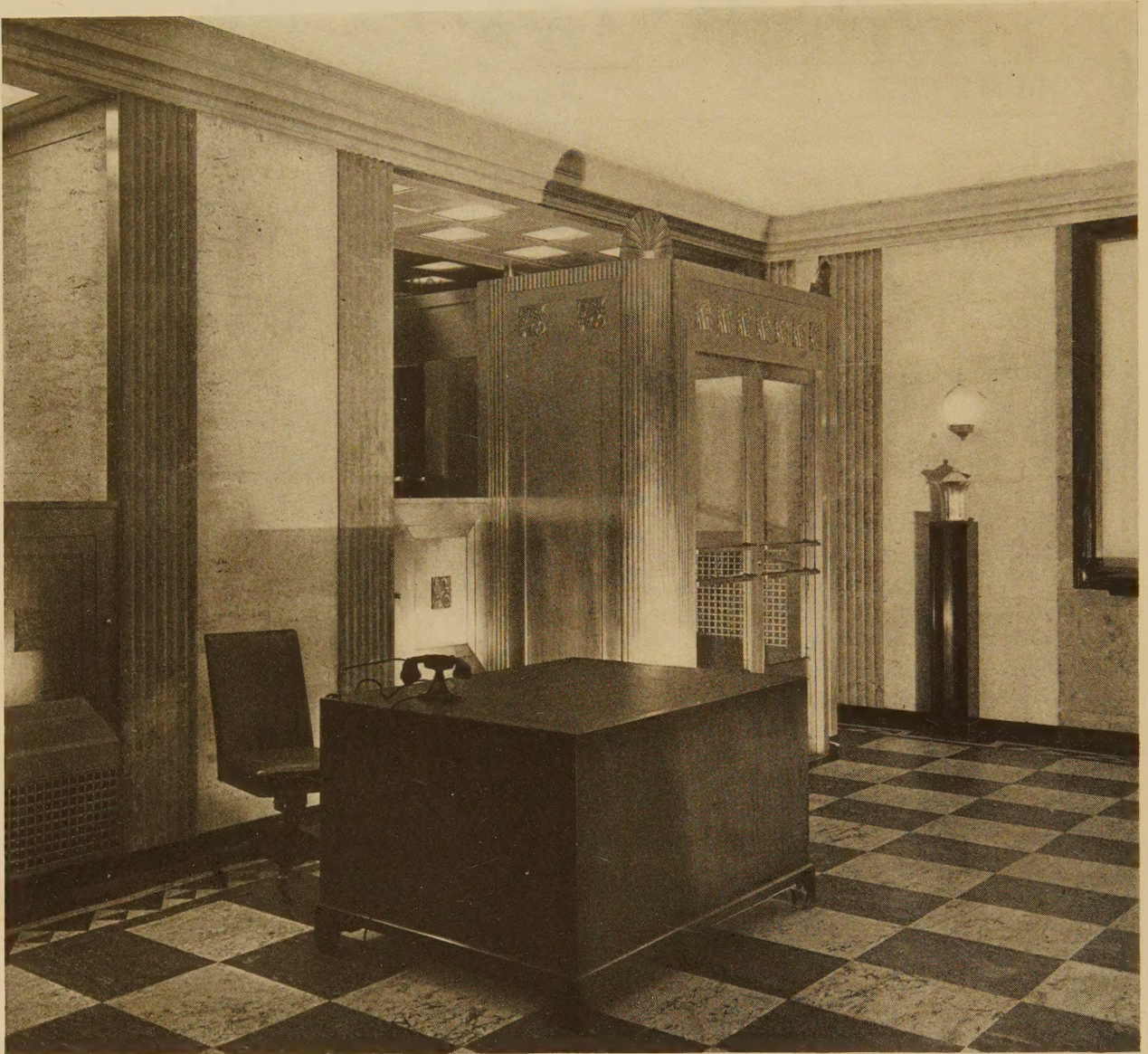
THE architecture of interiors sensitively reflects changes of manners on account of its intimate quality and also because of the ease with which construction and reconstruction can be effected. It becomes then a convenient sort of indicator whose readings quite plainly reveal architectural tendencies to the curious-minded. What does a collection of interiors executed during the past few months tell us about modernism? Where are we headed for architecturally, how great is our rate of speed, and what are the motivation and essential character of the unprecedented changes

going on around us? The very impossibility of answering any of these questions with a precision corresponding to the mechanical exactitude of our age makes speculation about them all the more fascinating.

Even a glance at the accompanying photographs should convince the most skeptical traditionalist that something different is happening and that novel and powerful forces are at work which are less archæological in their approach to these problems than heretofore. Qualities of timeliness and directness are in evidence. Those in sympathy with the modern movement will



Enclosed porch in the Chicago apartment of Walter G. Frazier, architect. The colors are green, black and white



Brokerage office of A. G. Becker, Chicago; Samuel A. Marx, architect. Walls, travertine; pilasters, Mt. Nebo golden Travis marble; floor, rubber tile in two shades of brown; metal, bronze; ceiling, silver

claim that such things as these signalize the extinction of eclecticism, that death-rattle of the Renaissance, with its attendant pilfering of historic styles. The work of to-day, they will say, leads toward a conception of design bearing a living relationship to the needs of our times and in high contrast to the indirections and dishonesties of a period of decadence happily passed by. One can well believe, as has been said, that we are setting forth upon a new and untried way whose end is vague and indefinable. The Renaissance endured some five hundred years. The modern or contemporary movement (may a beneficent Heaven soon supply us with a more descriptive name than either of these!) will very

likely fall into disuse in a lesser lapse of time on account of the marked acceleration of change in our era. Time fleets, art is long, and one expression will follow more swiftly, close upon another, each appropriate to its epoch.

This speed of change in architecture, as in every other human thing around us, is greater than ever before in world history. A deluge of mechanical improvements has obviously brought this about. Structures of to-day, no matter how beautiful or significant, have little permanence, and the swift development of expression, combined with economic changes, has rendered impossible that gradual culmination of a building project which is so marked in older examples.

Chartres, with its two lovely towers, each delightfully expressive of its own epoch, is utterly alien to our times. The movie, the airplane, and the radio of to-day, the miracles of communication of the recent past, and the developed television and other wonders sure to come tomorrow, have affected and will affect us profoundly. Along with a rapidity of obsolescence which bewilders, they have brought a solidarity of spirit to designers in all parts of the civilized world. Modernism in Helsingfors, for example, is instantly comprehended in America and given practical application.

American interiors to-day in the modern

spirit display, by their wide diversity of character, the confusion of influence which has had effect during their production. In common with all designs in the modern mode, they call to mind forcibly the marked experimental character of to-day's efforts. Potions, good, bad and indifferent, come out of our furiously boiling creative cauldron, and their most marked common characteristic is that they are quite different from everything that we are so swiftly leaving behind. Strong effort is apparent on every hand to find architectural answers to problems that are distinctly of our age.

Classification of the methods and character-



Library in the apartment of David Stern, Chicago. Samuel A. Marx, architect

istics of these modern interiors would be futile, and tiresome besides. Yet, perhaps, a few observations here would open up interesting viewpoints toward modernism in general. It is quite plain that an important and valued element of the architectural profession, the one from which the finest work in the classic manner of the recent past has come, is cautiously approaching modern expression through evolution from these classic forms it knows so well. Many of the finest interiors shown in these pages undoubtedly were strikingly classic in their embryonic stages, and they arrived at their present freshness of effect through processes of emasculation and simplification, a thinning-down operation often concluded by skilful substitution of newer motives for old. Some of the most gifted men of our time hesitate to bring their great abilities to bear in experiment from timidity born of admiration for old forms.

Another group of designers, very small in number, has steadfastly held to the precepts of

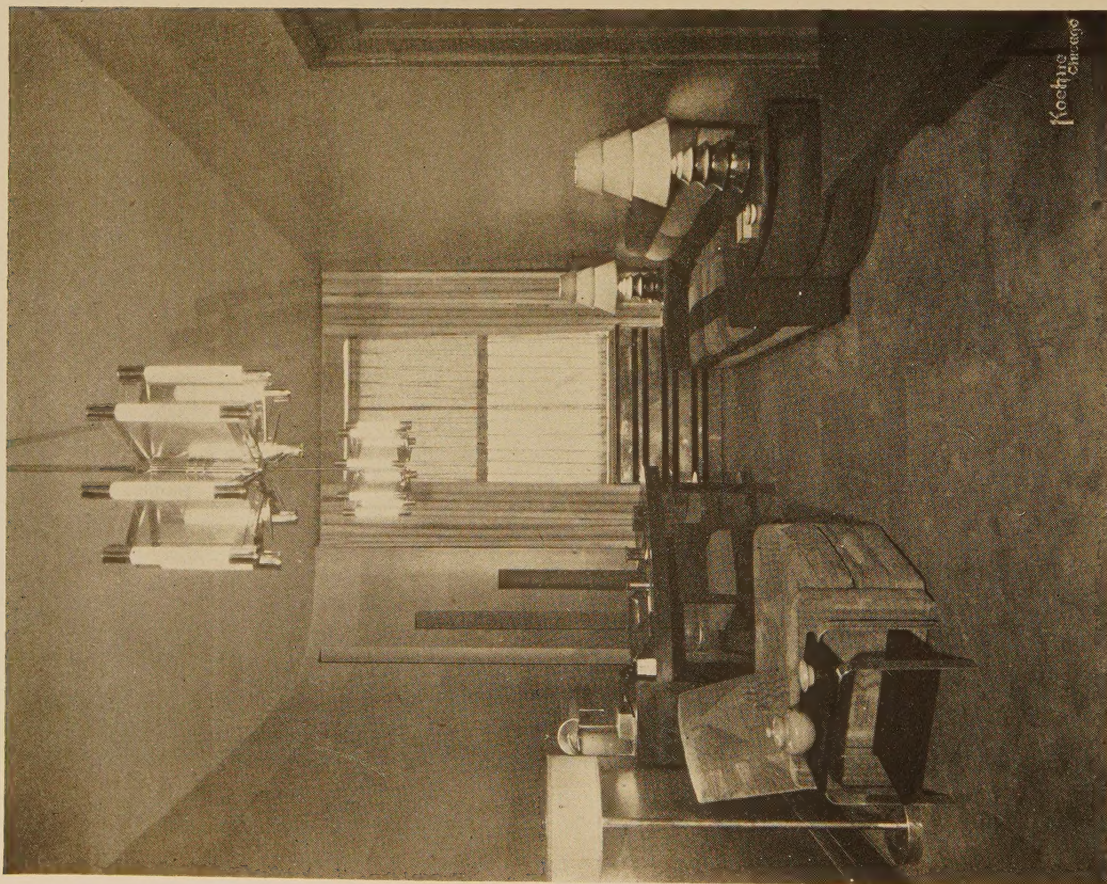
Sullivan, to establish which that great man, Houdinilike, extracted himself from Romanesque fetters, and which they too have not hesitated to defend and advance with the enthusiasm of zealots whenever occasion offered. But these men have now come into their own. They are prophets honored at last in their own country and the times have caught up with them. Habituated to conflict, they proudly go about in the land threading their ways gingerly mid fallen idols, searching for something else to overturn. It would be quite understandable too, if these last-ditch Sullivanites were secretly enraged to see upstarts of traditional background suddenly "gone modern," and moreover doing excellent and sincere work in a spirit akin to their own. Certainly one of the most entertaining features of these strange times is the sight of the "Beaux-Arts and Bizarres" strolling about arm in arm. Nevertheless, the work of this interesting, if non-homogeneous, group forms a most hopeful phase of modern work.



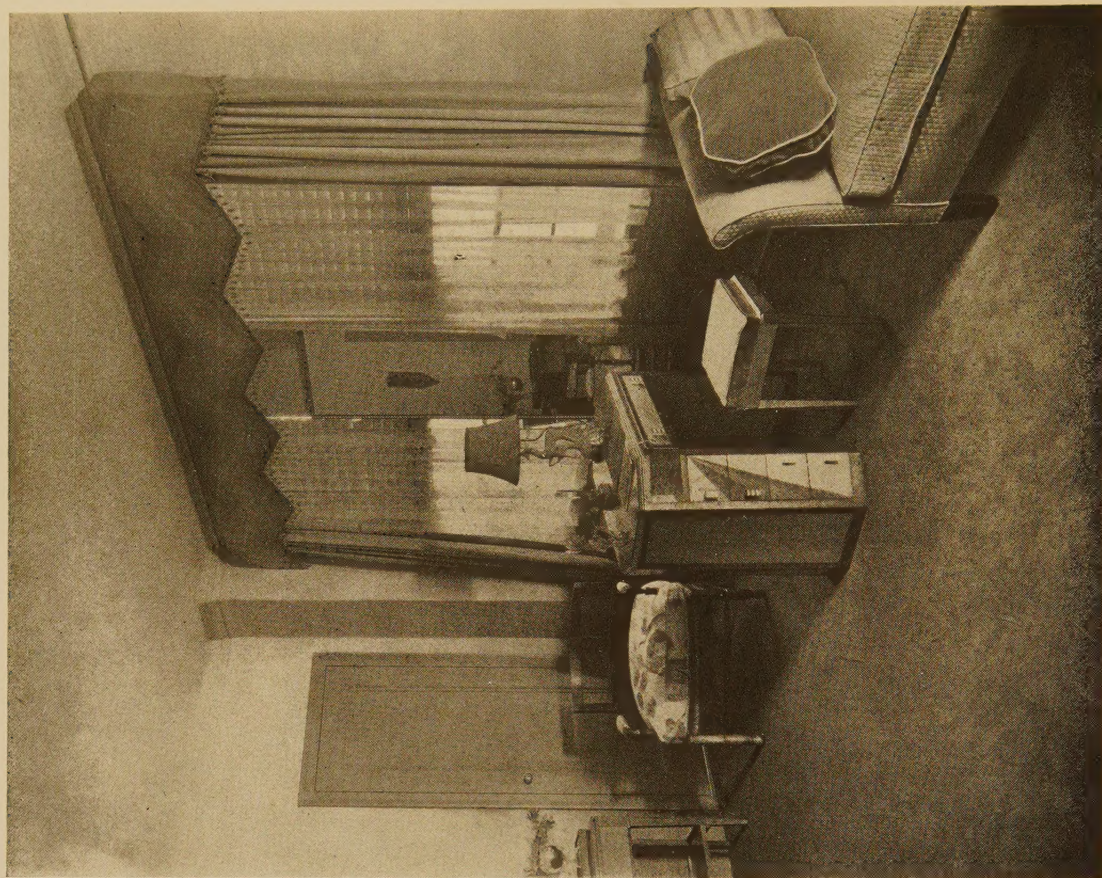
Study for Miss Florence Bartlett, Chicago, by Secession, Ltd. Color scheme, tan and sienna pinks; furniture and trim of walnut, Carpathian elm burl, pear wood and olive wood



Apartment of Arthur Lehman, New York; Aymar Embury II, architect; Samuel A. Marx, associate architect. Plaster walls, yellow and white, touched with silver; mantel, cream marble with silver; chairs, silver

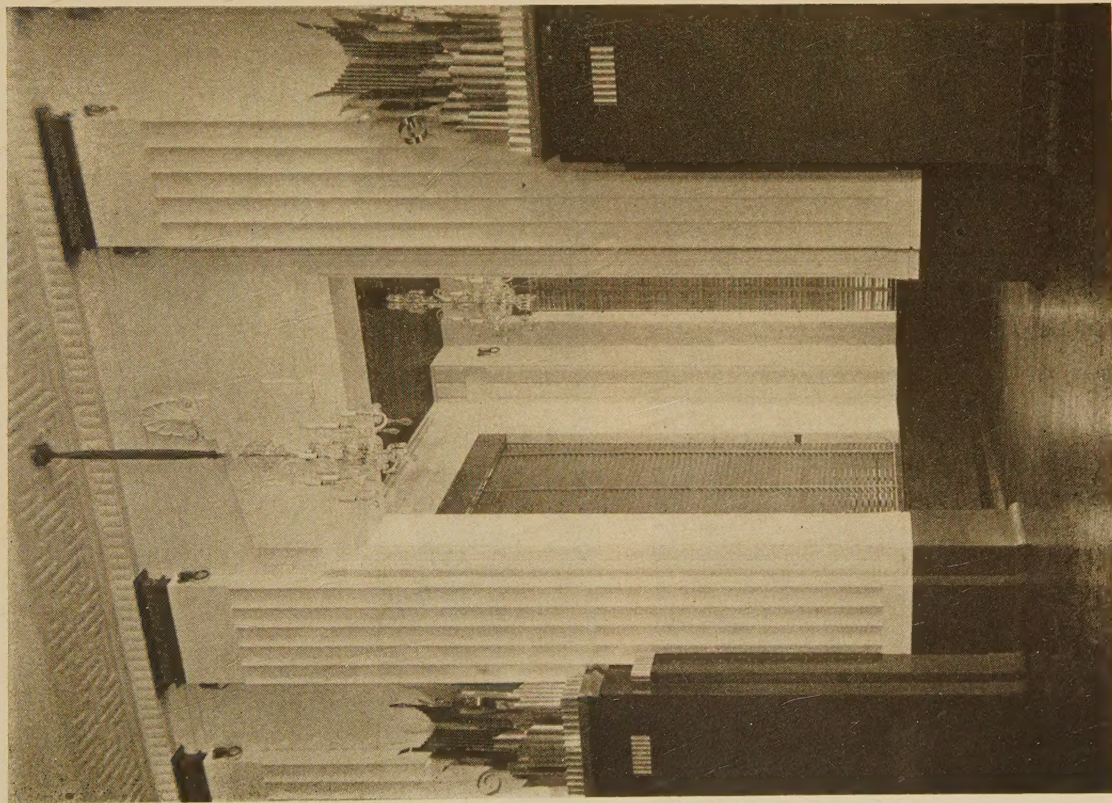


An office, by Secession, Ltd. Carpet, sienna red and tan; curtains, sprayed linen; furniture, sienna red lacquer and chromium plate; fixtures, chromium plate and glass

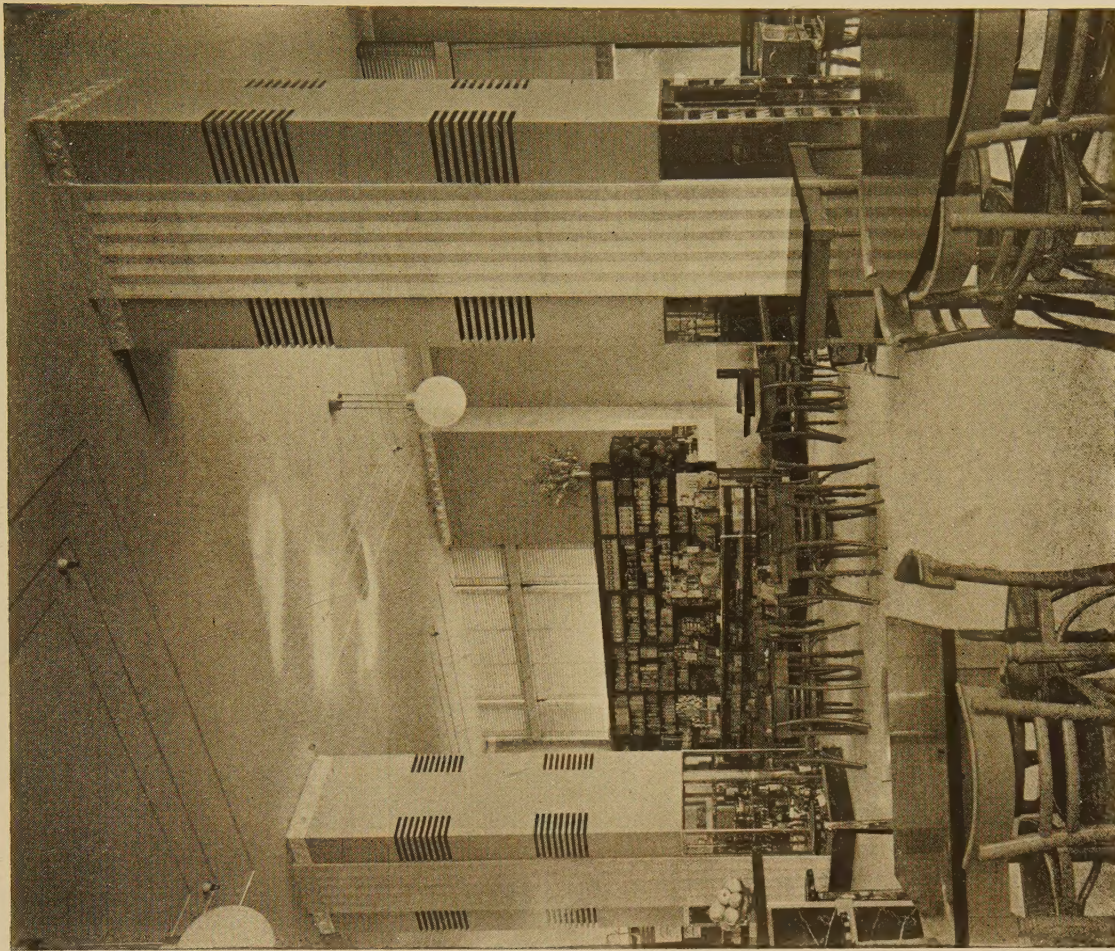


A bedroom, by Arden Studios, Inc. Carpet, blue; curtains striped rose taffeta and white silk; wallpaper, shaded pale pink to rose to slate blue; desk in aluminum leaf with colored glazing

» ARCHITECTURE »

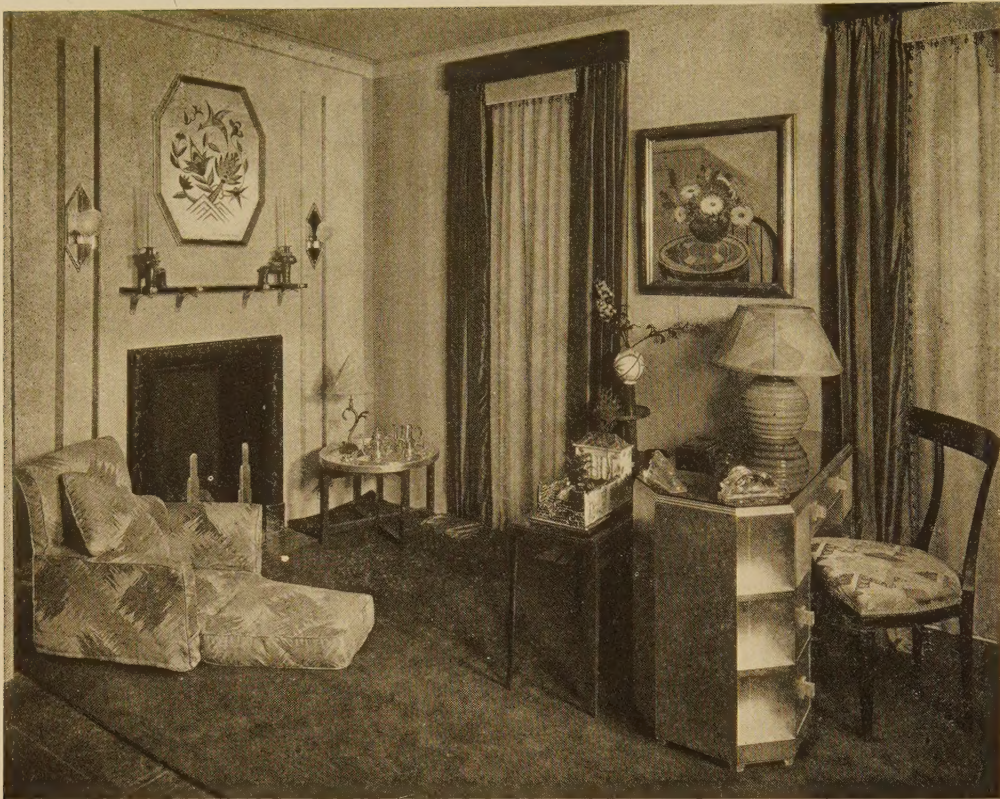


Alterations to Hotel Adolphus, Dallas, Tex.; Ralph Cole Hall and Victor Proetz, architects; Bryant & Sharp, associate architects. The metal tops of the radiators recall elements of the Corinthian capital



Interior of a drug-store, Chicago; Pierre Blouke, architect. The piers contain not only the supporting columns but the heating and ventilating ducts, functioning through the horizontal grille perforations. Walls and ceiling, rose; furniture, flamingo pink; floor, warm gray terrazzo

◀ ARCHITECTURE ▶



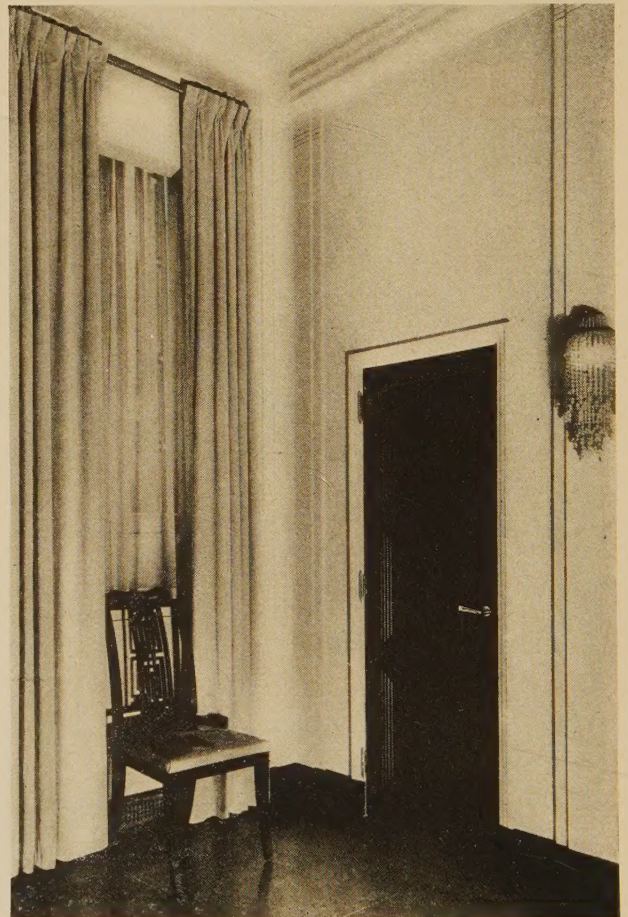
A writing-room in the country; by Arden Studios, Ltd. Wallpaper, shaded stripes in tan and green; curtains, red and gold taffeta, with valance in prune, red and white satin; under-curtains, green organdie; tea table, brown and silver; desk, silver leaf with black glass top; French side chair covered with silver and peach damask

An apartment-house at 1301 Astor Street, Chicago; Phillip B. Maher, architect. A corner of the lobby. Warm white walls, black floor; gray velvet hangings

These interiors are distinguished by daring, originality, direct use of form, color and texture, and disregard of previously accepted canons of taste. Their unblushing Americanism is their chiefest charm.

Interiors as well as exteriors are subject to the pitiless attentions of the faddist, the sensationalist, the incompetent, the mere commercialist and other evildoers. Perhaps the most serious danger confronting the present movement arises from the determination of some of its so-called followers to be different—at no matter what cost. The lamentable tendency to compose in newer forms, utilizing new European models instead of old, all without understanding of the inner nature of the modern, is also a threat to its successful development. Ornament and motive are negligible elements in to-day's efforts and mean little, whereas selection of form to the need means so much. Nor are imitation and skilful reproduction of European models in the modern mode likely in the long run to become anything more than a burden to the proper development of American expression. General adoption of such methods would return us in effect to the eclecticism we are leaving behind.

The materials suitable for interior use have always been more numerous and varied than those for exterior, on account of their freedom





A dining-room by Frank Brangwyn. The coloring is chiefly in blues and yellows, with the figured linen wall covering relieved by sections of painted squares

from weather exposure. Yet modernism, with its release from the traditional, has cleared the way for the introduction and utilization of many more—synthetic, composite, metallic, and novelly presented or modified old ones—through the wise use of which astonishingly fine results are likely to come.

There is also a very significant centring of attention by the modernist upon proper planning of rooms—an insistence that each room shall receive the same careful study formerly accorded only to the ensemble, with required circulation giving access to useful groupings, all arranged with due attention to function and to openings.

In short, the opening rank of the Pageant of Modernism is before us. In it, as in all human manifestations, are to be detected by the close observer, sincerity and triviality, creative power and base imitation, beauty and ugliness. But most important of all, a vitality is conspicuously present which completely harmonizes and identifies it with dominant modern traits. This vitality will, in the judgment of the writer, suffice to carry modernism triumphantly through the present period of experimentation. Look well then, gentle reader, not to expect characteristics to appear at the beginning of the Pageant which belong at the end. Originality and daring will come before refinement and good taste.

A lawyer's office, New York; Herbert Lippmann, architect. Ceiling and upper wall, chrome yellow; middle, light green-yellow; lower, deep moss green

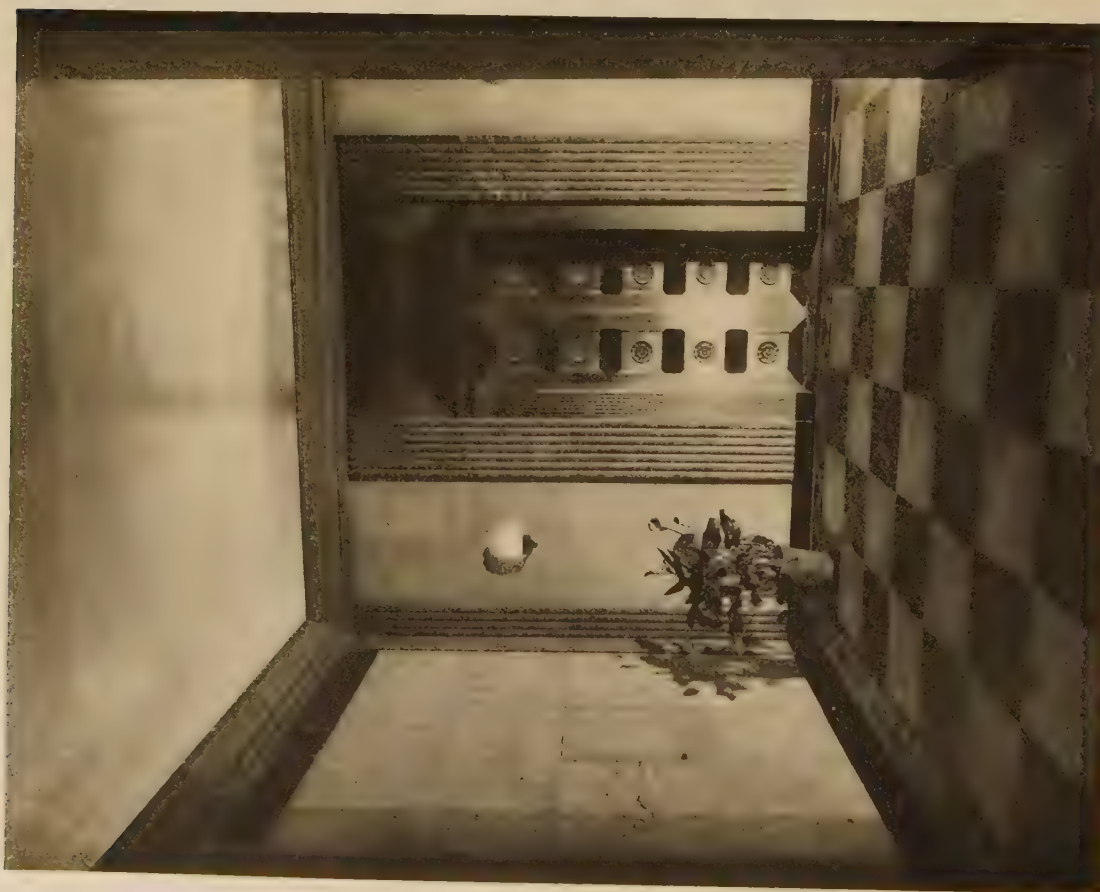




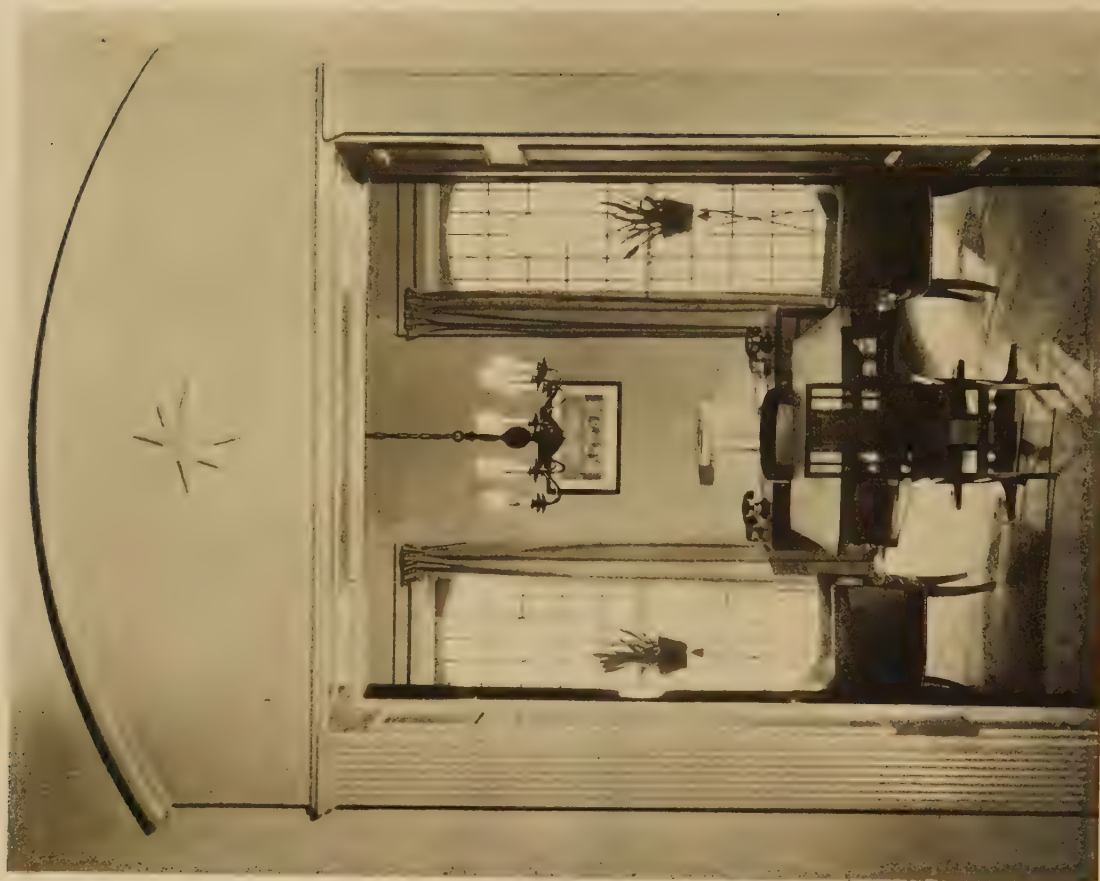
Lobby of Otis Elevator Co., Chicago; Holabird & Root, architects. Walls, Lirio marble in pale yellow-gray with brown; floors, dark brown and cream terrazzo; ceiling, light cream with touch of brown; door, gray with brown, black stripes; metal, bronze



Lobby of the Holland Plaza Building, New York; The Firm of Ely Jacques Kahn, architects. Above the light gray marble wainscoting the walls and ceiling are of plaster covered with silver leaf. Floors, terrazzo.

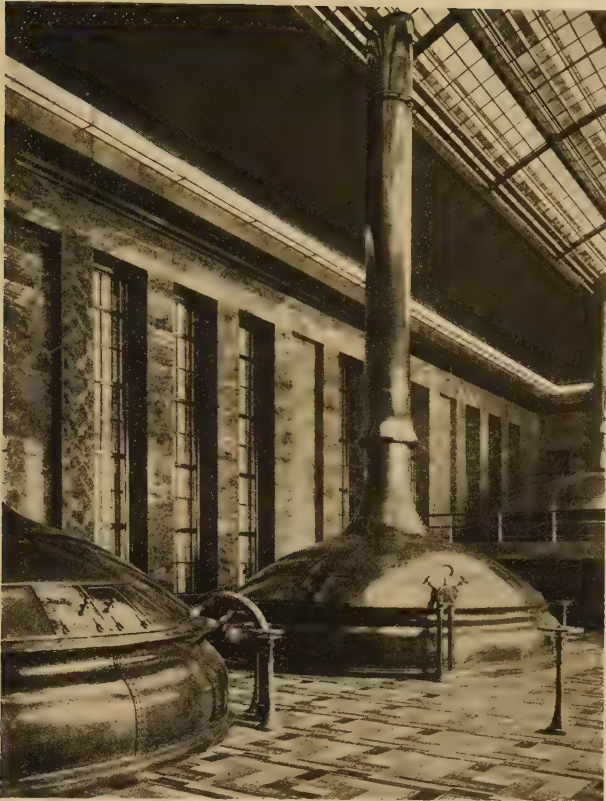


Brokerage office of A. G. Becker, Chicago; Samuel A. Marx, architect, suggesting the emasculation of detail in classic forms



Detail of a doorway from entrance lobby into reception room in the offices of Phillip B. Maher, architect, Chicago

« ARCHITECTURE »



The interior of a brewery in Berlin; Claus & Schepke, architects. The vats are of polished brass, the walls faced with glass, the floor of tile



Elevator alcove, La Salle-Wacker Building, Chicago; Holabird & Root, Rebori & Wentworth, architects. Allegheny metal with dark steel-blue glass



A phonograph shop in Vienna; Josef Hoffman, architect. Burl walnut veneer walls, furniture in graded stripes of brown, orange, and tan



Reception room, office of president, Otis Elevator Company, Chicago; Holabird & Root, architects. Walls of oak and walnut veneer



President's office, Otis Elevator Company, Chicago; Holabird & Root, architects. Chestnut walls; furniture, butternut and pigskin; sanded glass windows



Apartment of Mrs. Frank Wolff, New York; Louis Hessler, interior decorator. Walls, stippled yellow; upholstery, glazed chintz in cream and greens; drapery, crinkled linen, green and orange; furniture, maple and walnut with black trim; floor, marbled linoleum squares

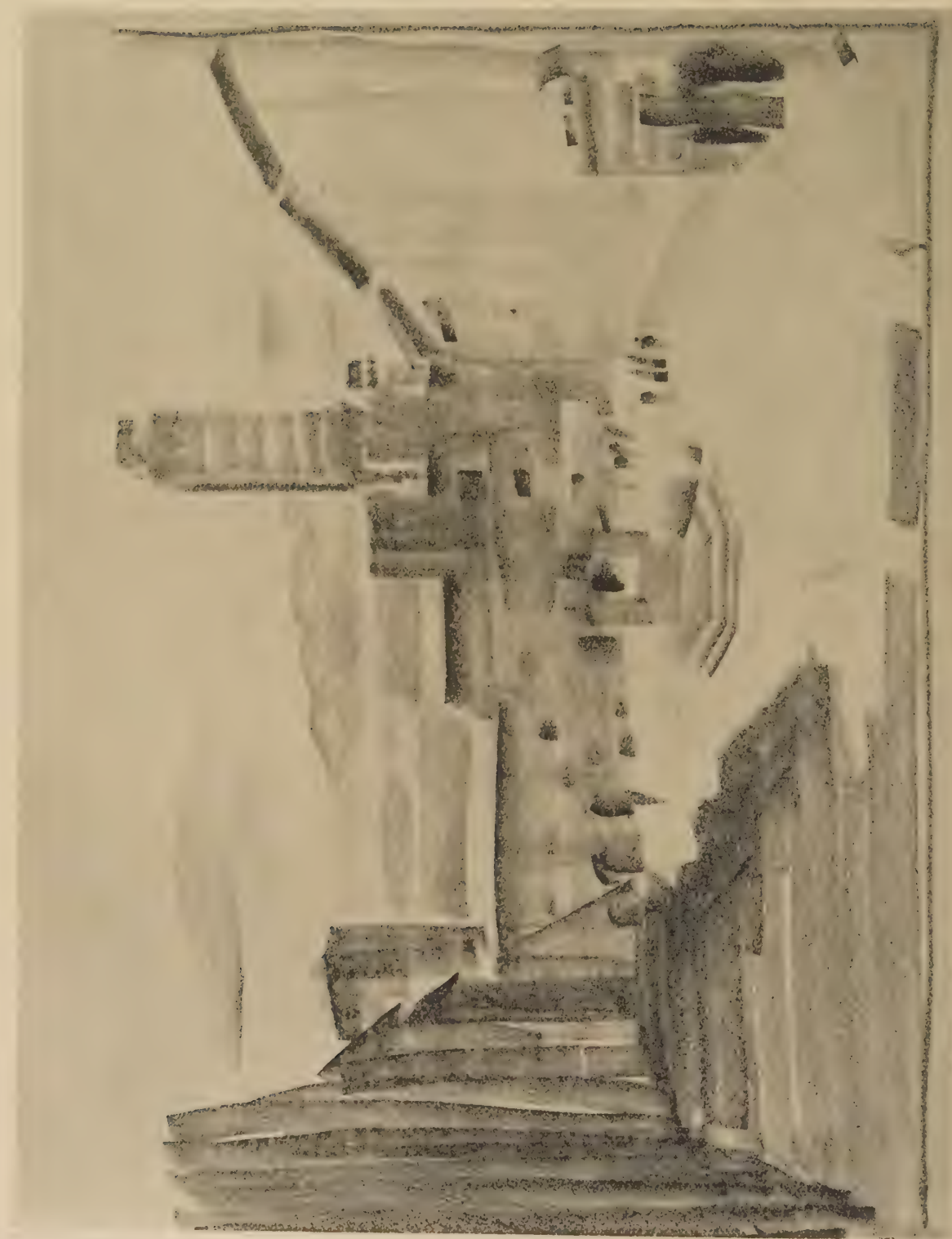
Pencil Drawings

by

LOUIS I. KAHN



[ARCHITECTURE]
CHARLES SCRIBNER'S SONS



The Plaza, San Gimignano
LOUIS I. KAHN



*Each of the two drawings shows
a street in Positano*

LOUIS I. KAHN





A CLERESTORY
WINDOW,
ST. THOMAS'S
CHURCH,
NEW YORK CITY

DESIGNED BY JAMES H.
HOGAN IN CONJUNCTION
WITH MAYERS, MURRAY
& PHILLIP, ARCHITECTS;
EXECUTED BY JAMES
POWELL & SONS

*The subject is "The In-
carnation of Our Lord,"
and the window has just
been installed in memory
of Florence Beekman
Amsinck Fish. Mr.
Hogan's first work in
this country comprised
the great apse windows in
the Cathedral of St. John
the Divine, New York.
This latest example, while
inspired in general effect
by the early Gothic glass,
does not affect the archaic
drawing of that period.
The color scheme is sim-
ple—chiefly blue, ruby,
green, and gold*



© 1930

*Memorial to the
American Gold Star
Mothers, New York
State Chapter. Lily
H. McLuckie, scul-
ptor*

*War Memorial for
Westport, Conn. J.
Clinton Shepherd,
sculptor*

Architectural News



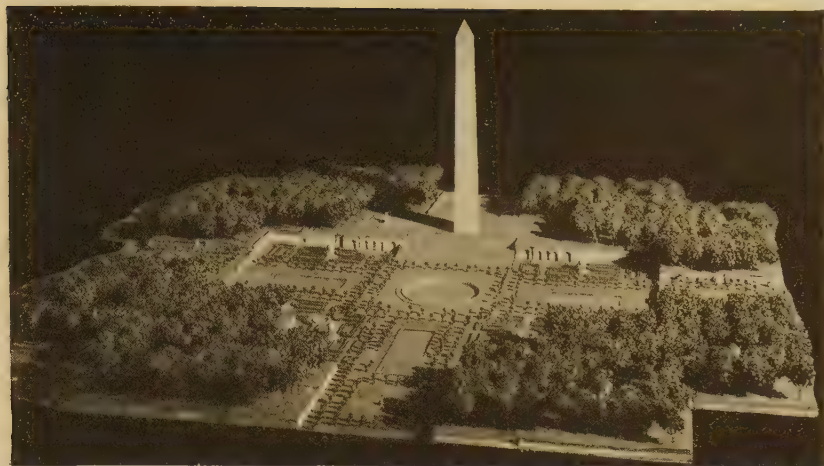
*The Eastern Columbia Building,
one of Los Angeles's newer struc-
tures in terra-cotta. Claude Beel-
man, architect*

*A progress photo-
graph of the Cathe-
dral of St. Peter and
St. Paul, Washing-
ton, D. C. Froh-
man, Robb & Little,
architects*



*The Administration Building of
the Chicago World's Fair for
1933, now under construction*

© 1930, by A Century of Progress

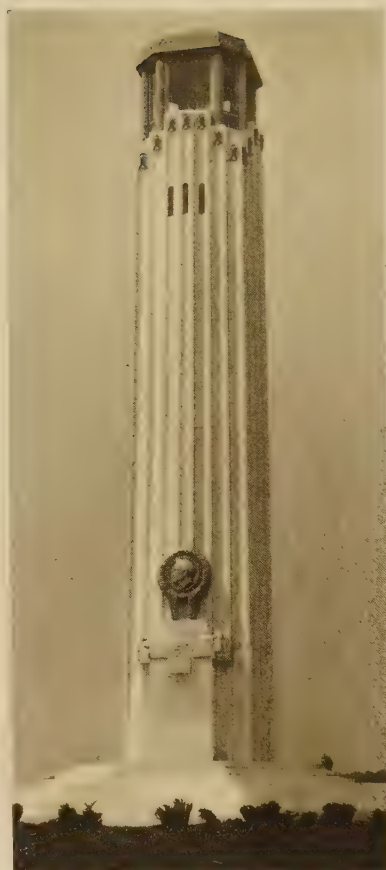


Model of the proposed development about the Washington Monument

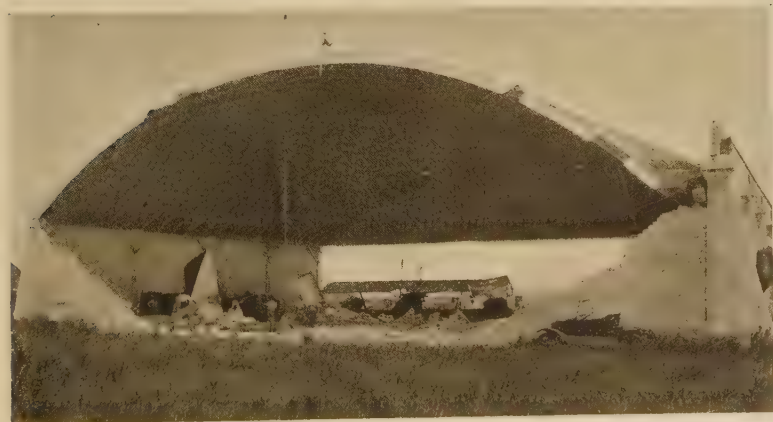
in Photographs



St. Paul's Cathedral, London, is at last free of scaffolding once more, and will be officially re-opened in June



The recently completed William Livingston Memorial Lighthouse, Belle Isle, Mich. Albert Kahn, Inc., architects; Geza Maroti, sculptor



The effect of a cyclone on the masonry walls of a Houston, Tex., airport hangar. Several arc-welded steel hangars withstood the blow



Carew Tower, Cincinnati. Walter W. Ahlschlager, architect; Delano & Aldrich, associate architects

BOOK REVIEWS

LE MEUBLE FRANÇAIS. D'Après les Orne-manistes de 1660 à 1789. By LE COMTE DE SAL-VERTE. 59 pages of text and 57 plates made from photographs, 10 by 12½ inches. Paper covers. Paris and Brussels: 1930: Les Editions G. Van Oest. 250 fr.

A posthumous volume by Le Comte de Salverte. It is intended that the work shall appear in two parts, the present volume covering the period from 1660 to 1789. Another volume is to appear presenting work from 1780 to the Restoration. This volume on the first period includes the author's selection of what he considers the best work of Le Pautre, Marot, Le Brun, Loir, Boulle, Toro, Oppenord, Juste-Aurèle Meissonnier, Duval, Lucotte, Radel, Roubo, Delafosse, and others.

MODERN ENGLISH FURNITURE. By JOHN C. ROGERS, A. R. I. B. A. 208 pages, 8½ by 11 inches. Illustrations from photographs. New York: 1930: Charles Scribner's Sons. \$8.50.

The author seeks to describe and illustrate English furniture of to-day to show what is being done by designers now living, how these men are expressing modern conditions of life as related to furniture, and to offer suggestions and ways on the right uses of modern furniture. In these days when wide departures from traditional lines in furniture making are likely to jar our sensibilities, it is the English people who have best kept their feet upon the ground, and have developed their designs from a traditional point of departure, and with a craftsman's regard for structure. Perhaps the English furniture designers' most outstanding contribution has been a utilization of the rare woods of unusual beauty.

SEAMS FOR COPPER ROOFING. By K. HILD-ING BEIJ. 24 pages, 6 by 9 inches. Illustrations from photographs and diagrams. Research Paper No. 216. Reprint from Bureau of Standards Journal of Research, Vol. 5, September, 1930. Pamphlet binding. Washington: 1930: U. S. Department of Commerce, Bureau of Standards. 15 cents.

NON-INTERPOLATING LOGARITHMS, CO-LOGARITHMS, AND ANTILOGARITHMS. By FREDERICK W. JOHNSON. 122 pages, 6 by 8½ inches. Flexible binding. No. 2 of the Simplified Series of Science Helps. San Francisco: 1930: The Simplified Series Publishing Co. \$2.25.

The author is instructor in chemistry, California College of Pharmacy, who has arranged his tables so as to give four-place and five-place logarithms and antilogarithms, and four-place cologarithms, by mere

inspection without any calculation whatever. The volume has a thumb index, making it possible to turn conveniently to any value recorded in the tables.

DOUGLAS FIR USE BOOK. Design Tables and Their Application. 204 pages, 5 by 7½ inches. Seattle, Wash.: 1930: West Coast Lumbermen's Association. \$1.

A complete handbook on the physical characteristics of this wood. Since many of the older handbooks carry tables of working stresses in connection with hemlock and spruce, but not of fir, and with the increasing use of fir for structural purposes, the handbook makes an acceptable addition to any architect's technical library. The design tables were prepared by, or under the direction of, Professor E. S. Harrar, College of Forestry, University of Washington, Seattle.

COMPRESSIVE TESTS OF BASES FOR SUB-WAY COLUMNS. By JAMES H. EDWARDS, H. L. WHITTEMORE, A. H. STANG. 14 pages, 6 by 9 inches. Illustrations from photographs and diagrams. Research Paper No. 218. Reprint from Bureau of Standards Journal of Research, Vol. 5, September, 1930. Pamphlet binding. Washington: 1930: U. S. Department of Commerce, Bureau of Standards. 10 cents.

WIND PRESSURE ON CIRCULAR CYL-INDERS AND CHIMNEYS. By HUGH L. DRYDEN and GEORGE C. HILL. 40 pages, 6 by 9 inches. Illustrations from photographs and diagrams. Research Paper No. 221. Reprint from Bureau of Standards Journal of Research, Vol. 5, September, 1930. Pamphlet binding. Washington: 1930: U. S. Department of Commerce, Bureau of Standards. 15 cents.

STANDARDS AND SPECIFICATIONS FOR NON-METALLIC MINERALS AND THEIR PRODUCTS. Prepared by JOHN Q. CANNON, JR., under the direction of A. S. McALLISTER. 680 pages, 7½ by 10½ inches. Illustrations from diagrams and photographs. Miscellaneous publication No. 110, April, 1930. Washington: 1930: U. S. Department of Commerce, National Bureau of Standards. \$2.75.

In this volume the Bureau of Standards has attempted to bring together the standards and specifications formulated by the national technical societies, the trade associations, and other organizations speaking for industry. Sections of the book which will be of particular interest to the architect are those on stone, sand, and cementitious materials, glass products, clay products, abrasives, and asbestos.

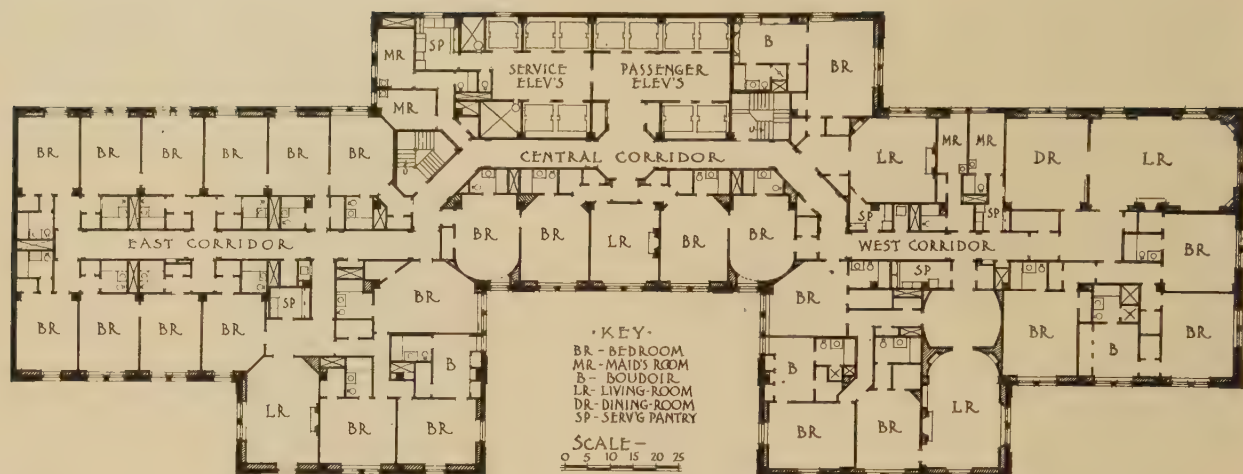


© Amemya

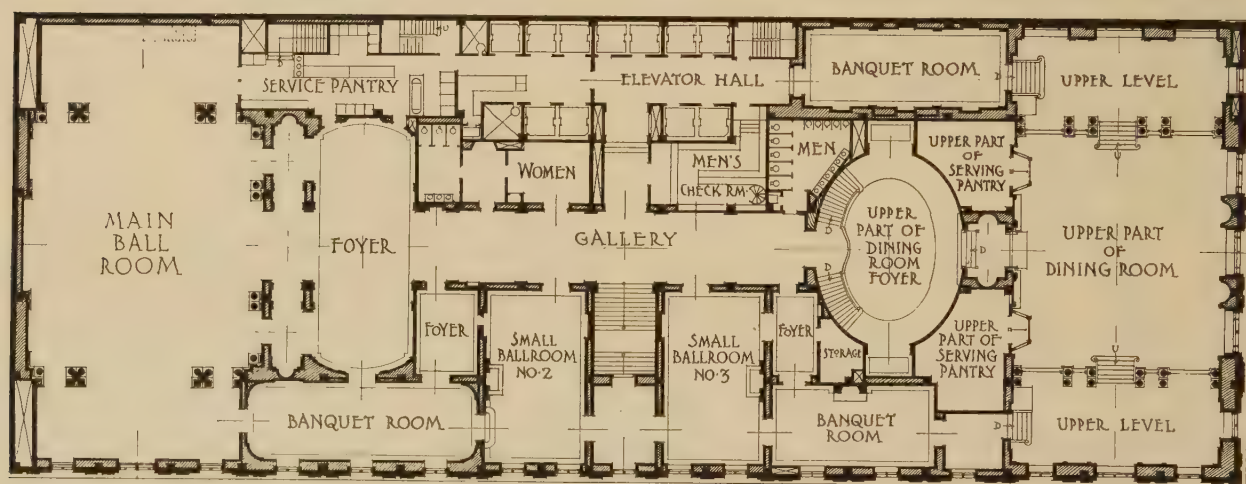
Pierre's is a threefold institution—a centre for lavish entertainment, a hotel, and a residential apartment-house. The building has a base of Rockwood stone, main walls of brick, and upper trim of terra-cotta, all of approximately the same color. The roof is of copper

HOTEL PIERRE, NEW YORK CITY

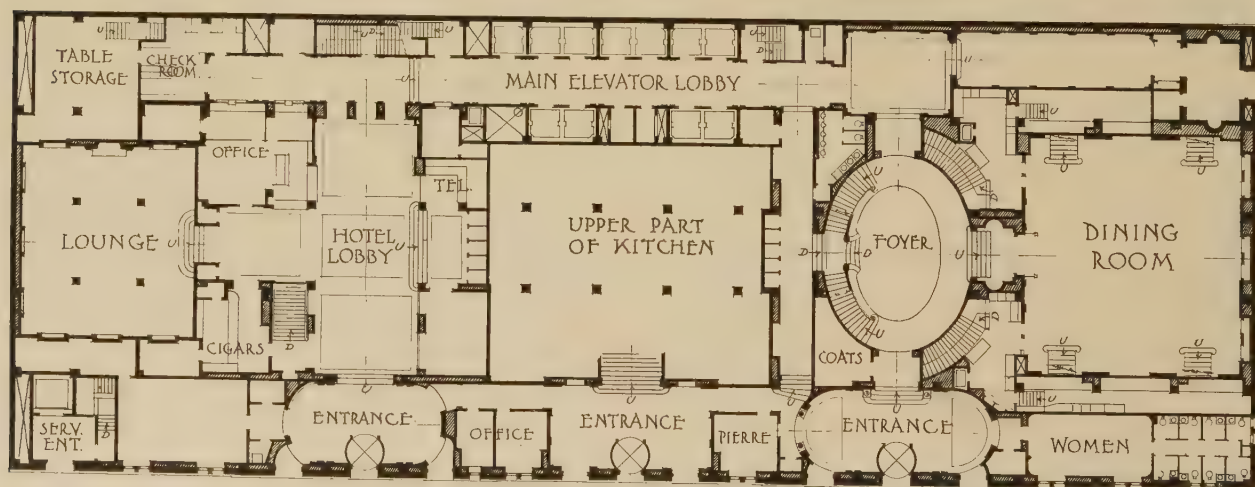
SCHULTZE & WEAVER, ARCHITECTS



Plan of Sixth to Ninth Floors, inclusive



Ball Room Floor (Second Floor)



Plan of First Floor

The threefold function of the establishment is evident from the three main entrances on Sixty first Street—at left the hotel entrance, at right the restaurant entrance, and in the centre the entrance for apartment holders.

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS



Richard Averill Smith

Detail of the base on the Fifth Avenue front. The main dining-room extends across this whole end of the building

The hotel lobby, the floor of which is of black Belgian and Alabama cream marble; walls painted gray and ivory



Richard Averill Smith

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS



Richard Averill Smith

The dining-room is almost one hundred feet long, of which the photograph shows one of the two raised ends. The woodwork is of walnut in its natural color, waxed. The lighting fixtures are combined with ventilating grilles of carved wood and bronze

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS

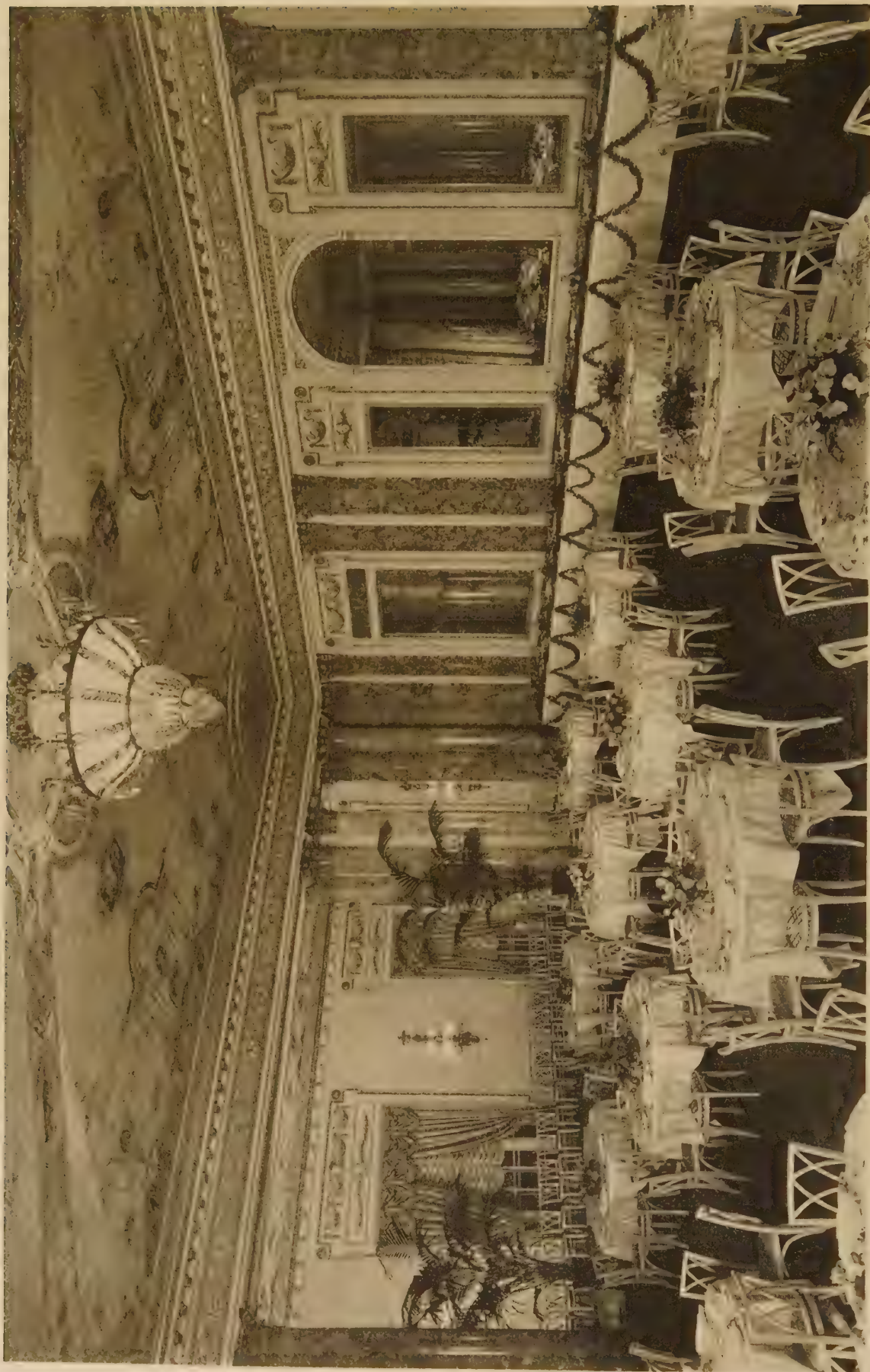


Richard Averill Smith

A view from one of the raised ends of the dining-room, looking across the lower level. The draperies are of golden hue against the natural walnut woodwork and ivory ceiling

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS



Richard Averill Smith

The main ballroom as arranged for a banquet; color scheme, ivory and gold

HOTEL PIERRE, NEW YORK CITY. SCHULTZE & WEAVER, ARCHITECTS

ARCHITECTURE
CHARLES SCRIBNER'S SONS



Richard Averill Smith

The oval foyer adjoining the dining-room. Doorways and stairway are of Rock-wood stone, floor and stair treads of Levanto marble. Walls are of light green, the doors painted wood

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS



Richard Averill Smith

Detail of the ballroom

HOTEL PIERRE, NEW YORK CITY. SCHULTZE & WEAVER, ARCHITECTS



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The fireplace in the lounge

[ARCHITECTURE]
CHARLES SCRIBNER'S SONS



Richard Averill Smith

The lounge at the east end of the building. The walls are of white oak

HOTEL PIERRE, NEW YORK CITY

SCHULTZE & WEAVER, ARCHITECTS



© Amemya

*A typical living-room in one of the apartments**The grille. Color scheme is in blue-greens, ivory and gold, the painted panels of marine life*

© Amemya

NUMBER VIII
IN A SERIES
OF
WORKING DRAWINGS

By Jack G. Stewart

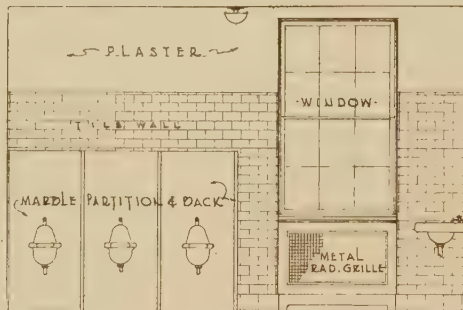
This series, in which one drawing will appear each month, is designed to cover the smaller practical problems that confront the architect in his day's work. The subjects chosen are those which, while not uncommon, call for some experience and knowledge of approved solutions. Next month the subject is Window Spandrels.



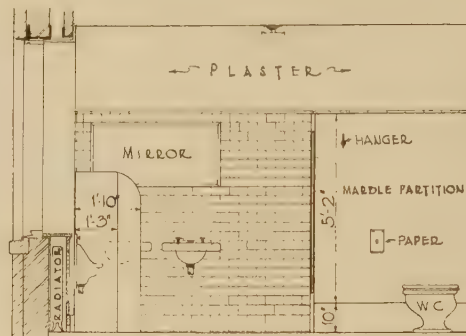
[ARCHITECTURE]
CHARLES SCRIBNER'S SONS

PREVIOUS SUBJECTS IN THIS SERIES

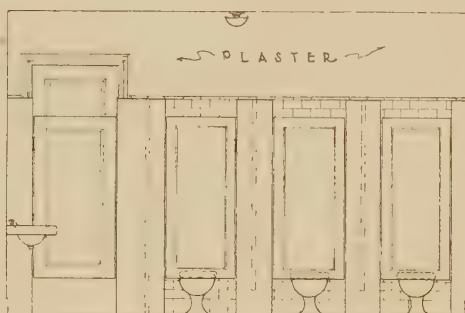
- I. FLAGPOLE HOLDER ON AN EXTERIOR WALL
- II. RADIATOR ENCLOSURES
- III. CIGAR SALES COUNTER
- IV. WOODWORK IN A LIBRARY
- V. BUILT-IN KITCHEN CUPBOARD
- VI. VARIOUS TRIMS AND MOULDINGS
- VII. TELEPHONE BOOTH



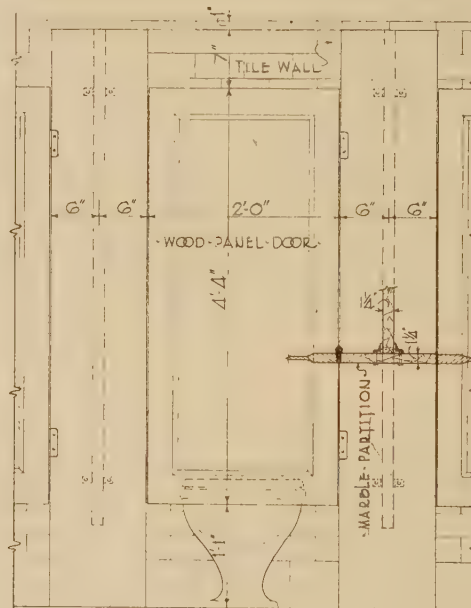
· SOUTH · ELEVATION ·



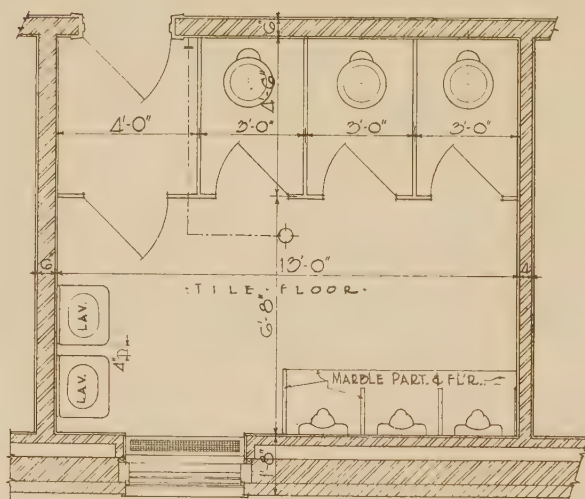
· WEST · ELEVATION ·



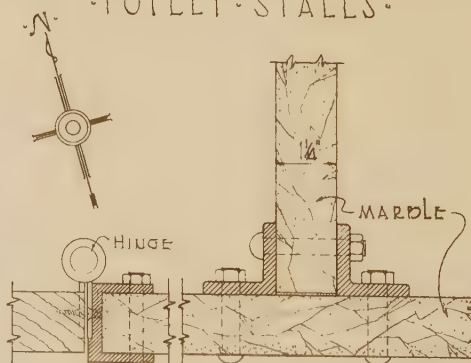
· NORTH · ELEVATION ·



· TOILET · STALLS ·



· FLOOR · PLAN ·



· PARTITION · DETAIL ·

△ SCALE △ DETAIL △ OF △ MEN'S △ TOILET △

· SCALE : $\frac{1}{8}$ " , $\frac{1}{2}$ " , 6" = 1'-0" .

· PLATE · N^o · 8 ·

Some Pitfalls in Supervision

By *W. F. Bartels*

VI. STEEL FRAMING

STEEL is still a relatively young building material, yet it has been a very energetic one in changing skylines. Thus far it is too short-lived for us to predict the longevity of its results, and certain theories concerning the crystallization of the steel molecule lead to the conclusion that we cannot hope for the endurance which has signalized Roman aqueducts. The superintendent on steel framing cannot be too strict in adhering to the principles of first-class workmanship and practice, for on this part of the work as on no other there are responsibilities attached which cannot be denied or eluded.

First, the base or billet plates upon which the steel columns rest should be set absolutely accurately, both as to horizontal distances and vertical levels. This will have a great influence in the "plumbing" of the columns, which should of course be set perfectly true. It is safe to say that less than one per cent of the steel buildings erected have their columns perfectly plumb at each story level. The architect well may wonder what harm it does to have steel work out of plumb several inches. Aside from any theoretical assumptions as to changes of stress in the steel, etc., it is worth while to examine a few of the practical ways in which steel out of plumb will cause trouble and have a deleterious influence on otherwise good work.

It naturally follows that if the columns are out of plumb the girders or beams connecting them will be shifted one way or the other proportionately. Then, since the elevator guides must be perfectly plumb, the plates fastening them to the beams must compensate for the amount the beam is out. Obviously this amount of compensation cannot be too great, without involving extra work in the installation of the

elevators. Again, if the columns are out of plumb they will cause the spandrel beams to be out of true, and this will make it difficult for the stone setter or bricklayer at the floor levels. If the walls are carried up plumb and the steel leans out, the bricklayer has to split his bricks to clear the steel (Fig. 1); the stone setter will have to channel out his stone (Fig. 2) with the possibility that a crack will eventually occur if the channel be cut too deeply; at a corner where two steel spandrels meet it is often better to cut off their corner intersection with a burner, rather than have the stone dangerously thin at this place. Sometimes the spandrel supports are slotted so the beams may be taken in or let out, but unless there is close co-operation between the stone mason and steel contractor, this may prove a boomerang to the contractor.

The column ends in steel work should be "milled," or machined off perfectly even and square. This will help insure the steel's being plumb, as well as give a true bearing for each succeeding column. Where filler plates are used in splices or connections, they should be well driven in position and not merely put in as a "shim" to make the riveting tight. They should form an integral part of the connection and must be treated as such.

When there is a doubt whether bolts or rivets should be used it is always safer to decide on rivets. There are many reasons for this. There is no danger of a rivet loosening by vibration. There is positive assurance that the rivet is acting as an integral part of the connection. Often this is not the case in using bolts—for example, out of four bolts in a connection it is possible that only one bolt is carrying the greater part of the load. Should this

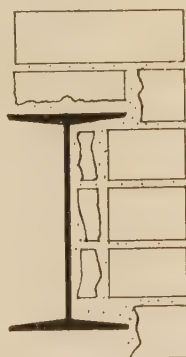


Fig. 1. Steel must be plumb to avoid this masonry weakness

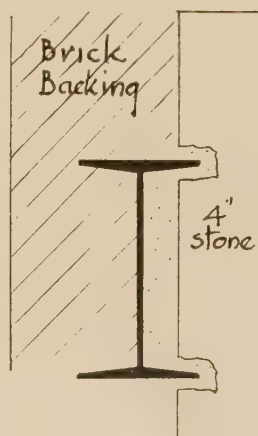


Fig. 2. Steel leaning out, with a plumb curtain wall, results in this awkward necessity

bolt shear, the load might either suddenly or gradually drop to one other bolt, until the last one is gone. This could be caused by unequal sized holes, or bolts which did not fit the hole tightly and were not drawn up sufficiently. When rivets are used the connection will hold all the load for which the framing was designed. The use of bolts versus rivets might be compared roughly to the old story of breaking the bundle of sticks—one at a time the feat was easy, yet the entire bundle taken together could not be bent. When bolts are used they should fit the hole snugly and should be drawn up as tightly as possible. Also the threads should be nicked to prevent the nut from coming off.

In inspecting rivets it would be almost impossible for the architect's superintendent to look at all of them. He will seldom have to do so. He can be fairly certain that all the obvious visible rivets will be satisfactory. It is the ones in the difficult and out-of-the-way places which may be faulty. Needless to say, all wind bracing should be riveted.

The hole into which the rivet is to be driven must be clear and true—that is, the holes in the two or more steel plates must be of the same size and must coincide. It is customary on the job to drive a drift pin through the rivet hole first to remove any small obstruction which might hinder the entrance of the rivet. However, if the holes do not coincide or one is too small for the size of rivet used, the riveter should not be allowed to use the drift pin to enlarge the hole. Instead the hole should be reamed out to a size which will make it clear and uniform, and then a corresponding larger size rivet employed. When the rivet is driven the shank should entirely fill the hole and the head should centre on it. On rivets well driven there should be no "collars" or "washers." Although the latter are not an indication of weakness in themselves, they are evidence of sloppy workmanship, and poor rivets can be expected in the offing. As a general rule no rivet should be allowed to be driven which is more than one-sixteenth-inch smaller than the hole in which it is to go. Riveters may say the shank is longer than necessary and they will fill the hole with it but this is a poor excuse for not getting the proper sized rivet.

When testing rivets a washer, a small piece of metal, or the finger nail, can be held on one side of the rivet head while the other side is tapped with a light hammer. This will set up

loose vibrations easily felt by one's hand if the rivet is bad, as well as give a rattling sound. When the rivet is perfect practically the same sound will be heard as though any other part of the steel were tapped.

The defective rivets should be marked and ordered taken out immediately. This is generally done by burning off the head with a torch and then "backing it out" with a hammer and "backer out," the latter being nothing more than a punch with a handle.

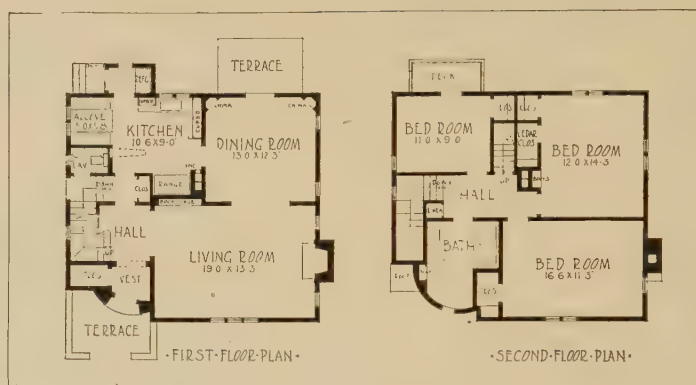
Should the riveting gang "blow the rivet out," the hole must be carefully inspected. This method consists in burning off both heads, then applying the flame to the rivet shank until it melts and runs out. This is easier than "backing them out" but it is more likely to injure the hole. If the hole is jagged and rough it should be reamed out before a new rivet is driven.

Beams or girders supported on masonry walls should rest on plates so placed on the wall as to distribute the load. Too often these are forgotten with the result that the wall is cracked and a precarious condition results.

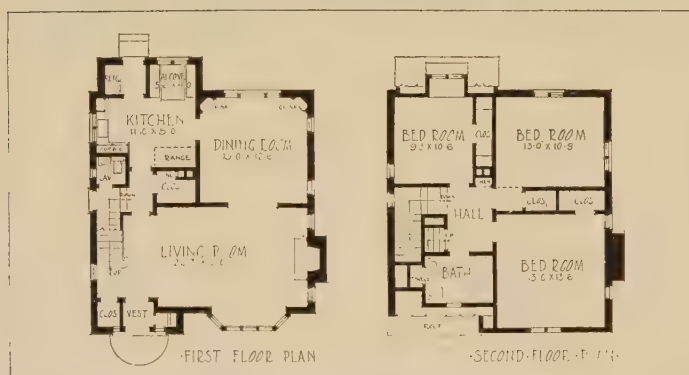
All steel work should be given a shop coat of paint and then another coat of a different color after erection. This will enable one to see immediately what places have not been second-coated. The superintendent will have to be on the lookout constantly to see that the paint is not diluted. Most painters will not lose an opportunity of doing so; it is the cost of the labor rather than the material which is expensive and a thin coat goes on many times more quickly than a proper mixture.

Care should be taken to see that the steel is free from rust and that all connections are well painted. The tops of the beams will not be painted on the job due to certain regulations which forbid it because of the safety of the men "walking a beam"; there is less chance of slipping when the steel does not have fresh paint on it.

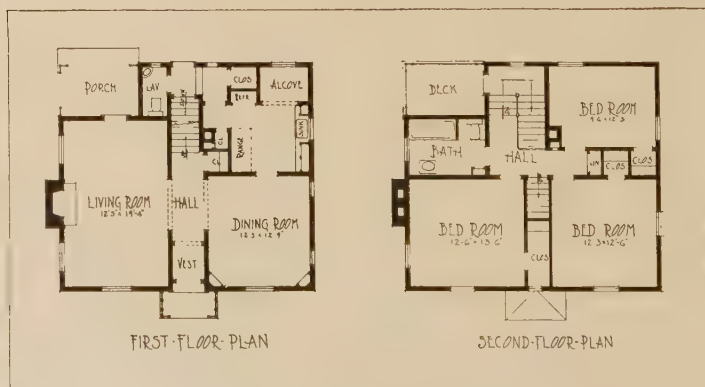
Often on the better type of buildings, after the steel columns have received their final coat of paint they are "parged." Prior to about ten years ago all steel "parging" was done by trowelling a thick coat of cement to the surface of the steel in order to further protect it. Now however this is seldom done but instead the columns receive a thick cement wash put on with a brush. While this is better than no parging, it does not begin to compare with trowel parging properly done.

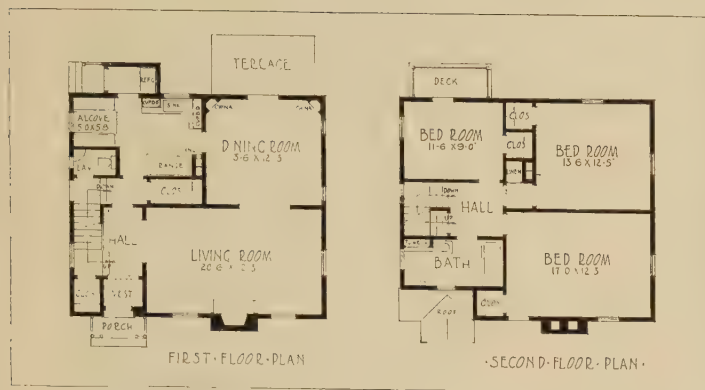


GROUP OF TEN HOUSES,
SHAKER HEIGHTS, CLEVELAND, OHIO
FOX, DUTHIE & FOOSE, ARCHITECTS

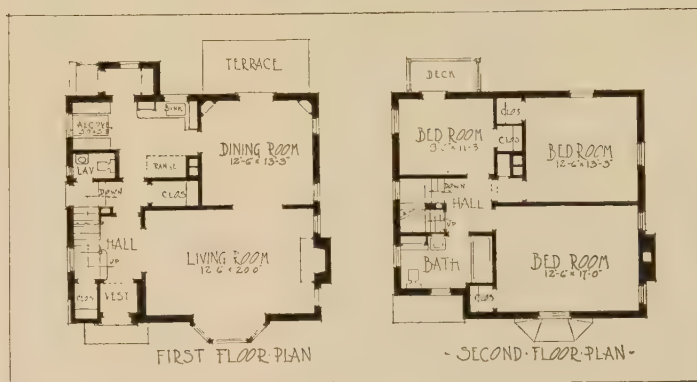


The houses were sponsored by the Home Owners Institute, Inc., of New York City, and by the Cleveland Plain Dealer, and Sykes & Thompson Company, Cleveland

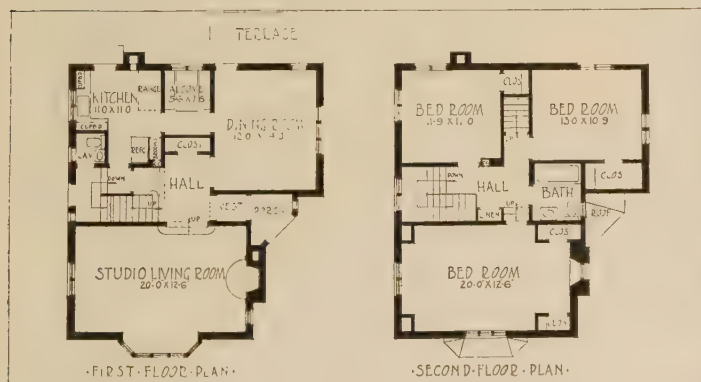




GROUP OF TEN HOUSES,
SHAKER HEIGHTS, CLEVELAND, OHIO
FOX, DUTHIE & FOOSE, ARCHITECTS



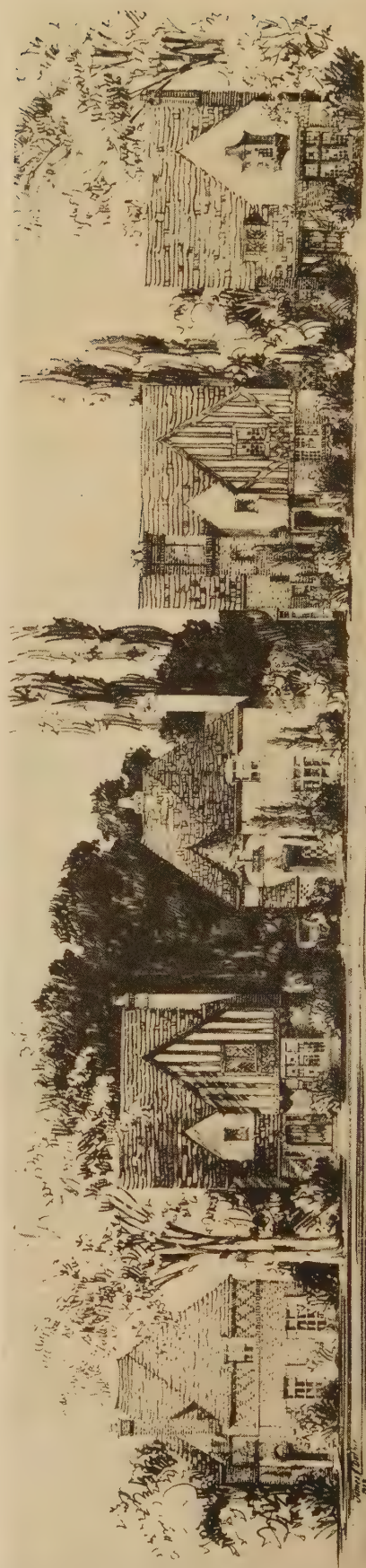
The floor plans in each case are beside the photograph of the house to which they correspond. On the next page will be found drawings of the group as a whole





GROUP OF TEN HOUSES, SHAKER HEIGHTS, CLEVELAND, OHIO
FOX, DUTHIE & FOOSE, ARCHITECTS

These pencil drawings were the preliminary studies for the group, individual houses of which are shown by photographs and plans on the preceding three pages



The Liturgical Requirements of Churches

II. THE CHANCEL

By F. R. Webber

THE past decade has brought about an almost unbelievable change in church planning. Years ago a church was generally thought of in terms of its outward appearance. Building committees often selected a church solely upon the basis of a water-color rendering of the exterior. A brilliant rendering it was, too, with bright red bricks, pale blue stone and a bright sky of cobalt blue. Those were the days of the open competition, and the architect who was able to submit the brightest blue sky and the most delicate pink thunderheads was quite sure to be given the award.

Nowadays we all think of a church in interior terms. Nobody would attempt making an exterior rendering first, and then working out the plan and the interior. We start with the plan, and the plan begins with the chancel. Everything else is thought of in its relation to the chancel.

Symbolically the chancel is the church itself. The nave is but an appendage. Its purpose is to provide shelter from sun, rain, and the cold of winter. Any symbolical meaning, other than its general cruciform plan, is read into it after the church is finished, for most symbolism is an afterthought.

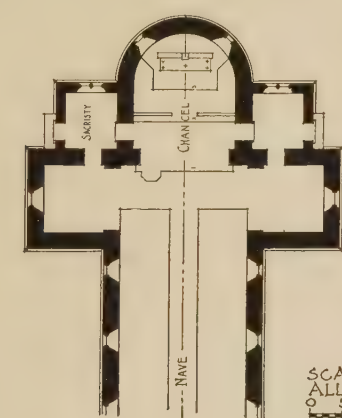
Liturgically considered, the chancel is the sole reason for building a church. We build in

order to provide a place wherein the Word of God is taught and the Sacraments celebrated. Even ritual and ceremonial are subordinate, for these things are but the colorful background for Word and Sacraments.

Everything in the chancel has a meaning. The altar, with its vestments and brasses, the reredos, the credence, the piscina, the rail, the lectern, the pulpit, and even clergy seats and choir stalls, all have a liturgical significance. No amount of far-fetched interpretation could read any symbolical meaning into a steam-radiator, a vent, a lighting-fixture or a pew-end, without bordering upon the humorous.

In earliest days chancels were small because the liturgy was rather simple. The semicircular apse, borrowed from the secular basilica, served the purpose quite well, for about all that was needed was a niche for the altar and a place for a speaker to stand. Liturgy and ceremonial developed gradually. Without doubt the Apocalypse of St. John had much to do with the development of both. And as liturgy and ceremonial became more impressive, a larger chancel was needed.

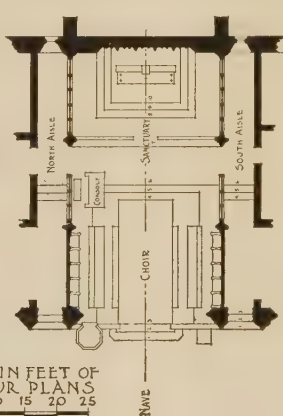
In every country we find that primitive conditions and small chancels generally go hand in hand. The typical small church of Anglo-Saxon days has a small chancel that is almost square in plan. The chapel at Brad-



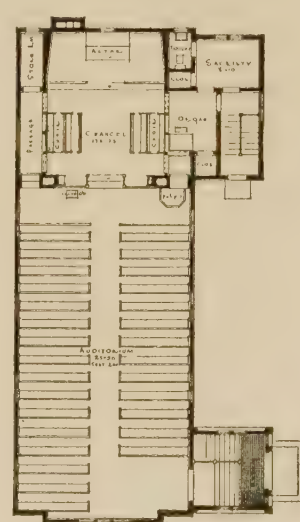
SCALE IN FEET OF
ALL FOUR PLANS
0 5 10 15 20 25

*Plan of the chancel end
of a Norman church at
Kodaikanal, South India*

*Plan for a frame chapel, show-
ing one of the simplest possible
arrangements of the chancel*



*Plan of a chancel pro-
viding for choir stalls*



*A small chapel with choir
stalls in the chancel.
James Walker, architect*

ford-on-Avon has a chancel that is but 10' 2" wide by 13' 2" deep. The chancel arch is but 3' 6" wide by 10' high, with an arch 5' 3" wide by 15' high. In the old Saxon churches, the chancel was but a mere recess large enough to contain the altar and an officiating priest.

Even in the eleventh century and later, we find that chancels were quite small. Most of the smaller churches had chancels but one bay in depth. Where one finds chancels of greater depth it is safe to assume that the original eastern termination was torn down, and a bay or so added. This is the case at Iffley, Old Shoreham, Stewkeley, Kingsclere, and a number of other places where either a bay or so was added, or else the entire chancel rebuilt. Barfreton still retains its 14' 6" by 16' 9" chancel. Patribourne has been much altered, but the old Norman chancel remains intact.

As liturgy and ceremonial developed during the twelfth and thirteenth centuries, chancels became very much deeper. The development of a more stately ritual and the deepening of the chancel always follow one another logically.



In America the chancel has a strange history. Back in Puritan days the non-liturgical denominations laid great stress upon the meeting-house idea, and gradually the chancel disappeared. Even the early Episcopal churches

did not have chancels of great depth. The earliest Lutheran churches of colonial times, such as Gloria Dei, Trappe Church, and the church at Wilmington, had chancels of comparatively small size.

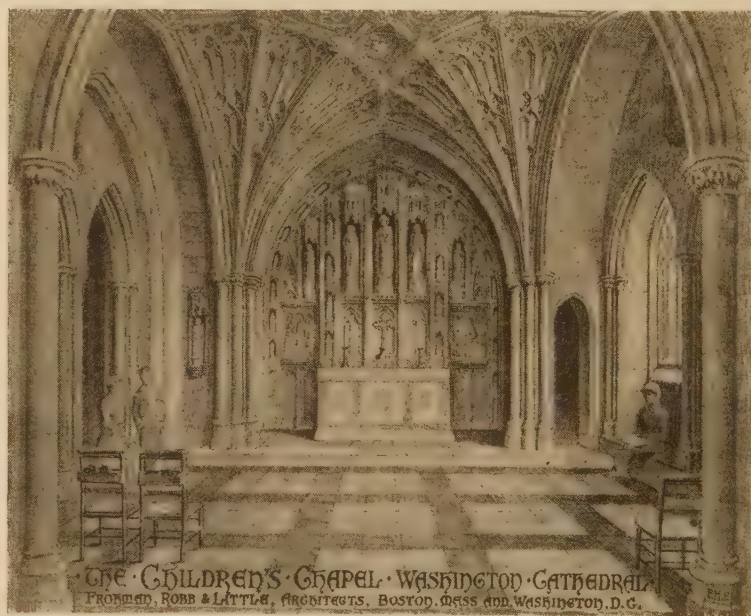
At the close of our Civil War, something new appeared at Akron, Ohio, in the form of a theatre-plan church. For almost half a century it was immensely popular among non-liturgical denominations, and was called the Akron Plan. The nave was in the form of a Greek cross with extremely shallow arms. Sometimes it was octagonal, and toward the end of the episode it became rectangular. There was no chancel at all, but merely a shallow platform with its forward edge rounded somewhat like the stage in a theatre.

In those days no attention whatever was paid to liturgics, except among the Roman Catholics, the Episcopalians, and the Lutherans. The other denominations spoke of preaching-services, preachers, audiences, auditoriums, lecture-rooms, rostrums, and preaching-platforms.

Then came a period when old rules seemed to be reversed. In all previous periods liturgy developed first and architecture followed. About twenty-five years ago one of the most astonishing architectural restorations since the Middle Ages set in. Not only the liturgical denominations welcomed it, but almost every other church body received it gladly. Almost overnight the old theatre-plan church vanished,



All Saints, Kenton, Devonshire; road-screen taking the place of chancel arch



The chancel of the Children's Chapel provides an example in a minor chapel of the sort used for occasional services

First German Evangelical Lutheran Church, Pittsburgh, Pa. Corbusier & Foster, architects. A well-arranged modern chancel without choir stalls



together with all the old terminology. Gothic churches based upon mediæval standards came back again, and Baptists, Methodists, and Congregationalists began to build chancels, erect dignified altars, and to speak of naves, narthexes, ambulatories, credences, and piscinae. Churches of this type seemed to call for vested choirs and liturgical services. These things are following rapidly in the wake of the architectural restoration.

The intelligent architect of to-day, when asked to design a church, takes more than preaching and hymn-singing into consideration. He lays out a chancel with the requirements of Word and Sacrament duly recognized, as well as the type of liturgical service to be used. In fact, he often anticipates matters, knowing that a fine church calls for a more dignified liturgy, and he provides for such a thing in the future.

In considering the liturgical requirements of the chancel, we will give our attention first of all to the small frame chapel. In nine cases out of ten these are built by amateur architects, and nothing is properly designed. A typical plan of this sort lies before us. The nave is 23' by 25' in size, and at one end is a stagelike platform 12' in width and but 6' deep! It is everything that a frame chapel ought not to be.

Even though the frame chapel may be but 25' by 50' in size, seating about one hundred

people, yet there is a chance to add a chancel of fairly dignified appearance. The very minimum ought to be a width of 16' and a depth of 18' to 20'. To the south will be a projecting clergy sacristy about 8' by 10' in size. North of the sacristy there may be a stairway to the basement, or a room for altar vestments and candles. A chancel 18' in depth permits one to have a sanctuary 12' deep, and 6' between the chancel arch and the communicants' step. There will be two steps at the entrance to the chancel, one at the communicants' kneeler, and another at the altar. The altar step ought to project 36" in front of the altar and about a foot at each end. The minimum space between the edge of this step and the inside of the communicants' rail is 3'. The rail must have an opening about 4' to 5' wide directly in front of the altar. This is symbolically and liturgically necessary, signifying that the way of access to the altar is open to the worthy communicant. Then there ought to be a space of from 6' to 8' between the chancel arch and the communicants' step, to permit communicants to assemble at the rail. An exit at one end of the rail is necessary in a small chapel. In a larger church there must be an exit at each end of the rail, so that those who have received the Eucharist will not have to crowd past those who are approaching. In Roman Catholic churches there is usually a continuous rail at

the entrance to the chancel, the communicants kneeling at the junction of nave and chancel. Many Methodist churches formerly had a rail at this place.

In the case of a small frame chapel, it is not always necessary to have a chancel arch. The transition from nave to chancel may be marked by a change in level only. Where most rigid economy must be exercised, it is possible to get along for a time with a temporary chancel but 12' in depth. This may be in the form of a mere platform, raised two steps above the level of the nave, with the altar raised

another step. In this case the communicants will kneel at the entrance to the chancel. It is a makeshift arrangement, used occasionally in the case of a newly organized mission congregation. The fact ought to be stressed that the arrangement is temporary, and that a better chancel ought to be added as soon as possible.

In the case of a newly organized mission congregation, the liturgical requirements are generally simple. While it is always best to start with a complete liturgy, and with all the ceremonial of the denomination in question, yet the architect will not have to make provision for the rapid and orderly handling of a large number of communicants. Neither will there likely be a choir in the lower part of the chancel. The music will probably be led by a "reed organ" placed in the northeast corner of the nave, parallel with the main axis of the church building. In the case of the mission chapel, there is apt to be but one clergyman, and he may have to officiate without the help of a server or a sacristan.

Should the requirements call for a vested choir within the chancel, matters will be complicated somewhat. This calls for a much deeper chancel, with choir stalls providing seating-space for a number of singers, alleys for processions and recessions, and sufficient space between the west end of the choir stalls and the choir parapet, and between the east end of the stalls and the communicants' rail.

In a small chapel, a single row of choir stalls, one on each side of the chancel, may be suffi-



*Patricxbourne Church, near Canterbury.
A Norman chancel with a square eastern
termination*

cient. In a church of average size, two stalls on each side are generally used. It is only in a very large church that three rows of stalls on each side are used, and in this case the stalls against the wall are reserved for the clergy, and are generally canopied.

The choir stalls should not be too crowded. A good rule is to allow 20" of pew-length for the boys and 24" for the men. The stalls ought never to be closer together than 36" from back to back. Even more space is desirable. Then one must allow a space of from 8' to 10' between the panelled screens in front of

the boys' stalls. Thus it will be seen that a chancel with two rows of stalls on each side will have to be at least 20' to 22' in width.



Some years ago the late Bertram Goodhue was asked to revamp an old stone chapel which adjoined Christ Church, Buffalo. It was a rectangular building about 36' by 80' inside measure. Goodhue inserted rows of columns and arches in the nave, making the nave itself about 23' 7½" wide. He laid out a chancel 17' 7½" wide by 25' 5" deep. The sanctuary proper is 10' deep from the east wall to the inside of the communicants' rail. The choir is 13' 3" deep from the edge of the top step to the edge of the communicants' step.

Pilgrim Chapel, a frame building in Kenmore, a suburb of Buffalo, is a 25' by 76' structure. The chancel is 17' 7" wide by 25' 2" deep. The sanctuary is 10' deep, and the choir space 13' 3" deep, not including entrance steps.

These two examples prove that it is possible to construct a small chancel even in the case of a chapel, and include stalls for a small choir in the layout. Unless space is at a premium it is better to make such a chancel somewhat wider and deeper even for a very small choir.

Further details of the chancel will be discussed in the March issue.

Friday, October 24.—Electus Litchfield was telling me to-day of his delight in the architectural ensemble at 57th Street and Fifth Avenue. On the corner stands the new building for The New York Trust Company by Cross & Cross, with a bold use of the orders in white marble, a sort of transitional phase. On the 57th Street side of it stands the little black marble Hollander building, designed by Shreve, Lamb & Harmon—a gem of metal work in its simple flat black setting. Around the corner on Fifth Avenue is Ely Kahn's great Squibb Building—a fresh and logical essay in the new art of the tall building. As Mr. Litchfield says, are we always conscious of the fact that we are living at a time when an architectural style, fundamentally different from what has gone before, is being developed in an amazingly short period of time under our very eyes?

Saturday, October 25.—Several attempts to break down the new multiple-dwelling law in New York State have failed. One earnest attempt sought to give to engineers, as well as to the architects, the right to file plans for new buildings. Naturally, with the term "engineer" covering mere branches such as electric, heating, civil, and other varieties, there was no qualification entitling them to file plans for buildings. The test case was dismissed when an attorney pointed out that any engineer who was qualified to prepare plans for a building could easily apply for and secure registration as an architect.

Sunday, October 26.—The quinquennial election for the Hall of Fame has just been held, and once more Charles Bulfinch has failed of election. Apparently not even yet is the American people conscious of the architect's importance in our scheme of civilization, or is it we ourselves who are overpersuaded as to his importance?

Monday, October 27.—Robert Stott, who has been making a round of the Scandinavian countries this summer, tells me that the plans for the French International Colonial Exposition are well under way. This is to be held outside of Paris next year. The shocking part of his news was that the United States is to be represented by a reproduction of Mount Vernon, for which the construction contract has been awarded to Sears, Roebuck & Company of Chicago. Just why the United States, at a time when it has developed the steel-frame high building—certainly marking an era in architectural history—should be represented abroad by a gentleman's country home in wood as of a hundred and fifty years ago, is not clear.

Tuesday, October 28.—My old friend, Claude H. Miller, who has built twenty-one houses, tells some of his experiences and thoughts in *The American Magazine*.



The Editor's Diary



Among many interesting observations is this: "Sleeping-porches are like cold baths in the morning. They are wonderful in the summer, but in the winter they aren't so hot." Another one: "Building a fireplace is like the old lady who hoped she'd have good luck with her bread."

Wednesday, October 29.—Aymar Embury gave a luncheon at The Princeton Club to-day for Lieut.-Governor Lehman and fifteen or twenty architects. In spite of the fact that the guest of honor is standing for re-election next week, the talk was in no sense political, but dwelt rather with the difficulties connected with the State's architectural activities. Is it possible that the present large programme of public work could be speeded up by the employment of architects outside of the State architect's office? If so, how should these architects be selected? Is it possible that some revision of our statutory provisions as to contracts is desirable? At the present time the law says that the State must advertise for bids, and must award the contract to the "lowest responsible bidder." Responsibility is interpreted at present as consisting merely of the ability to secure a bond. This is not enough. There should be further measuring sticks by which the "responsibility" of a bidder is determined. Those present were impressed by both the magnitude of the State architect's activities, and the difficulties attending their speedy execution.

Thursday, October 30.—Some one, it seems to me, should rise and lead a cheer for the Westchester County Park Commission. It would be difficult to find a finer job of planning and planting than has been done north of Manhattan from Mount Vernon to the Bear Mountain Bridge by this Commission under the able leadership of Jay Downer, chief engineer, Gilmore D. Clarke, landscape architect, and their associates.

Friday, October 31.—William Jones Smith makes an incisive comment upon the architectural profession and its lineup at the present day: "I presume the architects might be classified as radical progressives and conservative progres-

sives. An architect who is not progressive simply does not exist in the modern category. These two groups are widely separated in their general ideas, one believing in direct contact, the other in evolutionary progression."

Saturday, November 1.—It becomes more and more evident that we must reconstruct our ideas of the parking garage, dismissing any ancient prejudices. New York City's Board of Estimate and Apportionment is considering an amendment to the Zoning Resolution indorsed by several civic organizations. It would set up certain conditions to govern the action of the Board in granting exceptions to the district use. In the first place, "a 'parking garage' shall be a structure for the transient housing of more than five hundred automobiles, in which no repairs or servicing, and no sale of any supplies or equipment for automobiles shall be permitted, excepting the sale of emergency supplies of gasoline and oil."

Meanwhile, the Regional Plan of New York calls attention to the fact that from the standpoint of slowing down traffic on a thoroughfare, the presence of a garage is equal to the entrance of a busy traffic street. The approaches and exits of garages produce as great a collision point in a thoroughfare as is created by a busy traffic street. The garage will be proportionately worse than the entrance street for the reason that its entrances are blinded to the through traffic passing it.

It would seem, therefore, that while we have got to have "parking garages" in business centres, these might well consist of a ground floor that is as nearly as possible without front walls, permitting all cars using it to withdraw easily from the street itself.

Sunday, November 2.—I have just learned that the body of William Rutherford Mead, who died in Paris in June, 1928, has been buried in the Protestant Cemetery in Rome. It would probably be a satisfaction to him, could he know it, that his last resting place is in the city which he did so much to make known to hundreds of architectural students through The American Academy, of which he was a founder.

Monday, November 3.—I see that the Yale undergraduates are making themselves heard as to some of the architecture now being built on the campus. The attack which appears in a new undergraduate periodical, *The Harkness Hoot*, focuses upon the Sterling Library with the remark that, "few works can equal it as a monument of lifelessness and decadence; none can surpass it in extravagance and falsity." Branding the style as "girder-Gothic," which the writer, William Harlan Hale, says "has turned a modern library into a fortress, and a modern gymnasium into a cathe-

dral," he derides the practice of concealing steel supports in stone and masonry walls, saying that "vaults, instead of supporting the roof, are supported by the roof, and buttresses, instead of holding up a wall, are held up by steel."

Thus speaketh the rising generation.

Tuesday, November 4.—We have all known that the cost of building has been showing a marked decrease of late in spite of the fact that neither material nor labor has come down appreciably. Figures just issued by the Marine Midland group of eighteen New York State banks show that the cost of a six-room frame house is 13 per cent less than it was a year ago. The items comprising the total cost of the house as given in the banking group's survey are as follows:

	TO-DAY	1929
Masonry (including excavating).....	\$595.50	\$701.39
Lumber and millwork....	2,044.66	2,407.69
Plastering.....	325.00	335.00
Plumbing.....	475.00	483.00
Heating.....	210.00	250.00
Painting (interior and exterior).....	335.00	400.00
Hardware (rough and finished).....	77.00	97.95
Electrical fixtures (including wiring).....	148.00	178.00
Tile.....	34.00	45.00
Gas service.....	34.45	34.45
Shades.....	20.00	30.00
Miscellaneous (surveys, insurance, permits)...	50.85	50.85
	\$4,349.46	\$5,013.33

Wednesday, November 5.—At to-day's monthly meeting of the architectural editors we discussed the rather broad question of where the architect is going. Unquestionably no other profession has so widened in scope during the last few generations. In former days, an architect could concentrate on his plan, walls and roof. Now the thousand and one questions of heating, ventilating, vertical transportation, air conditioning, electrical equipment, hydraulics, sanitation, rise up to complicate his duties, to say nothing of the overwhelming increase in the variety of newly introduced materials and methods of construction. It seems almost inevitable that the profession must become departmentalized in some way, or practitioners confine themselves to specialties. In addition to these complications there is the growing power of large building organizations—organizations so large that it is they who first confer with a client, and establish sites, costs, and even materials, before the architect is brought into the picture. At the other end of the scale lies the field of small-house design in which, under present conditions, the architect cannot profitably practise. He is being hemmed into a middle ground which seems likely to become more constricted

as time goes on, rather than otherwise.

Considering the size and complexity of the problem, it is not surprising that no solution was found, no conclusions reached.

Thursday, November 6.—To-night at The League we heard a lot about the proposed Chicago Fair of 1933. Mr. Holland, of the National Research Council, told of the conception in the large. The Trustees, instead of saying to themselves and the world, "We are going to have a fair," put the problem up to the National Research Council which, as may be recalled, is the organization brought into being during the war for correlating American industry in the pursuit of our one objective. The Council has been studying the problem for several years, asking the leaders in every branch of science how each particular branch might be dramatized for the American people, for the Fair is to be a celebration and dramatization of one hundred years of science—the hundred years of Chicago's existence as an organized community.

The Architectural Commission, Messrs. Hood, Cret, Corbett, R. T. Walker, Arthur Brown, Holabird, Burnham, and Bennett, has been at work for a year and a half. Their first job was to face the fact that in a comparatively restricted site they were to build an exposition which would be visited by one million people per day, with a peak load of one and a half millions. Every exposition ever held has been a single-story affair, so that a tradition has grown up to the effect that people cannot be made to rise above the ground level to see an exposition. Since this one has got to be on three or four levels in order to make the best use of the site, and to avoid discouraging distances for the pedestrian, the architects hit upon the scheme of delivering the public at the top instead of at the bottom, and allowing them to meander through the exhibitions in a general downward direction by means of ramps instead of steps. Each level, however, is designed with wide terraces so that one never has the oppressive feeling of being confined inside of a story above ground.

Another fundamental circumstance is that exhibition material in these days may be best shown by properly controlled artificial light. Therefore, windows become unnecessary. Again, the buildings erected must be taken down from the park land used within a year after the close of the Fair. Again, the site is filled land in the water, of exceedingly dubious value for foundation work, so that the traditional scheme of stucco is out of the picture because of the danger of uneven settlement and cracks. Again, with buildings in three or four levels, the fire hazard necessitates a fire-proof construction. From all of the above it will be seen that it would be

absurd to attempt to meet all of these requirements in the forms of any historic style. The problem is new, and calls for a new architecture.

The buildings thus far under construction are being worked out with a steel frame, rolled-sheet-steel floors, roofs, and side walls, with a composition board of cement and asbestos used for insulation and outside wall covering.

The Fair is to present a picture of science and industry that will be something far more than merely educational. The development of the architecture itself, which happens fortunately to be out from under the pall of any building code, promises to be not the least of the startling, stimulating, and forward-looking features of the exposition.

Saturday, November 8.—Experienced the shock to-day of seeing a building for which I had made drawings, but which was erected under the sole supervision of the owner. Resolved: That which an architect cannot supervise in every detail, he should not draw.

Monday, November 10.—I hear that the construction of Muir Shelter Hut has just been completed from the design by Henry H. Gutterson. Twice I have stood on Muir Pass, the backbone of the Sierras—12,059 feet elevation—and can appreciate the difficulties of putting up a building there. The design, I understand, provided for a building entirely of stone, including the conical roof. The builders endured severe hardships in their work. It was necessary to carry sand on pack animals about nine miles, and water two and a half miles; cement and other supplies, including food, were trucked to the nearest road-end, and carried on pack animals from there to the site, a four-day trip. Between regular trips, the pack train made a special trip down to timber-line to bring fuel up to the workers.

Tuesday, November 11.—Lunched with Herbert Lippmann, who told me something of the difficulties incurred by those who are designing the six-room house plans for the Architects' Small House Service Bureau.

Spent an hour with Ralph Walker and Stephen F. Voorhees looking over drawings for interiors for some of their recent buildings. We were saying that craftsmanship in the present day has reached a new plane. Those who mourn the passing of the good old days when the hand craftsman was at work, seldom appreciate the different sort of craftsmanship that is required and found to-day—the craftsmanship of mathematical precision, the craftsmanship of intelligent and closely knit collaboration. We bring together teak wood from India, mosaics from Germany, marbles from Italy, steel from Pittsburgh, stone from Indiana, rare woods from all over the world, and make these things in a surprising-



VAN NELLE FACTORY, ROTTERDAM, HOLLAND

J. A. BRINKMAN & L. C. VANDER VLUGT, ARCHITECTS



ly short time an architectural unity, which in its accuracy in construction, its durability, and the ingenuity and skill brought to it by many hands, is an achievement at which we may marvel. The craftsman who wove your oriental rug did not worry particularly when his pattern failed to fit at the end. He merely cut it in half or distorted it. Craftsmanship of to-day cannot do that. Added to the sort of skill which the hand craftsmanship required is the necessity for mathematical accuracy of a type never before realized in building.

Thursday, November 13.—It seems almost inconceivable that a number of architects, representing many organizations in the profession, should have met to-day at lunch to consider the problem of the unemployed draftsman. While no definite figures are available, it seems likely that there are fifteen hundred to two thousand unemployed draftsmen in New York at the moment. A number of suggestions were made as to ways and means of ameliorating this condition, but the fundamental fact remains that the only cure for it is a stimulation of business generally, and of building in particular. Once more the suggestion was made that architects should point out to clients who are holding up projects for one reason or another, the fact that this is a bargain time for the man who would build. The Committee is assembling some figures and facts which indicate that building costs at the moment are possibly 15 to 25 per cent below costs to which we have become accustomed. This condition is not one that can last, so that the opportunity for the shrewd builder of new property may pass by to-morrow. Every architect has in his files preliminary sketches or even working drawings of projects thus held up, and which, in the present bargain-counter sale, might be revised and brought to completion.

Friday, November 14.—The Philadelphia Art Alliance is announcing an interesting scheme for a circulating-picture club which will be established in Denver, Washington, Columbus, Providence, and Springfield, Mass. Any one may now visit the galleries of the Art Alliance Circulating Picture Club, and borrow one painting and two etchings, which may be taken home and retained for one month. At the end of this time the pictures may be purchased or returned and exchanged for others. This privilege is covered by a small yearly membership fee. All of the pictures are by distinguished American artists. I suppose we shall be buying art on the instalment plan before long.

Saturday, November 15.—The Woolworth Building was designed twenty years ago. Meanwhile other high build-

ings have come and some of them have gone. To-day the Society of Arts and Sciences awarded its Gold Medal to Cass Gilbert, who designed this building. A bronze tablet bearing the portrait of Mr. Gilbert will be placed on the building. The members of the jury were Robert Aitken, Irwin S. Chanin, William A. Delano, Raymond M. Hood, Jonas Lie, Benjamin W. Morris, and William A. Starrett.

Monday, November 17.—A writer in the *Illinois Society of Architects' Bulletin* pokes fun at the idea of standardization in house building. Quoting from Leonard P. Reaume, president of the National Association of Real Estate Boards: "In the last ten or fifteen years the motor car has doubled its efficiency and cut its price in two by mass production. Builders, working on the old unit plan, have doubled their costs. Bathrooms could be fabricated in standard units . . . delivered to the house and hoisted into place with a crane, all complete." The *Bulletin* dismisses this thought with: "Realtors may find such stuff an easy means to keep them before their public, but it doesn't inspire confidence half so much as it suggests the silly season," which indicates that some one in the Illinois Society of Architects must be singularly blind to the march of events. Standardization in building units is not a theory of the future. It is a fact of to-day. Who among architects, designing the home of average size, has his sash made at the mill as was the case fifteen or twenty years ago? We buy sash, shutters, doors, stair rails, balusters, moulding, kitchen and pantry equipment, as well as all of the plumbing, as standardized units. It is obvious that the road we are travelling leads to further and further standardization. That is the direction of American progress. That is the natural accompaniment of quantity production. That is the logical and only possible way for more and more people to have the comforts and luxuries of the age.

Tuesday, November 18.—Members of The Architectural League and others interested in architecture, the theatre, and art in general, met to-night at dinner to honor Norman Bel Geddes and to see the opening of his exhibition of ideas for the Chicago Fair. Two of these ideas have appeared in these pages: the Restaurant in the Air, and the Water Pageant Theatre. Six other designs no less startling in conception are shown by photographs, drawings, and models at the League exhibition. Bel Geddes is a good deal like a cocktail before dinner: there may not be much food value in it, and perhaps it has no standing among the utilitarians, but it is stimulating and opens the pores of the mind. There are probably those who will say that Bel Geddes's design

for a submarine restaurant is too difficult and too expensive a project—few would dare to call it impossible in these days. His concert halls and theatres, his outdoor cabaret and dance hall are certainly unlike anything that has ever been created under the sun, yet, with all of their daring and discarding of accepted traditions, there seems nothing inherently impossible about any of them. In fact, they seem ideally suited to a world's fair, where, if any place, we are certainly entitled to our leaps across uncharted spaces.

Wednesday, November 19.—I was interested to see that Colonel William A. Starrett, in a speech before the Advertising Club of New York to-day, seems to agree with a recent note in this *Diary* with regard to our close approach to the maximum economical building height. Colonel Starrett said, "It may be even ventured that already we have attained the practical limits of height from an economic standpoint, although the engineer still visions the possibility of double the greatest height we have yet attained. The limitation does not lie with him, but with the public who must use the building. The high costs of lofty construction will join public impatience and perhaps physical discomforts of those towering elevator ascents, and there will be found the height limitations." Colonel Starrett feels that the continually rising land values and press of population in cities will force larger buildings, though not necessarily higher buildings. In other words, he agrees with many who now maintain that the city block—or a pair of them—is becoming the logical unit of building development.

Thursday, November 20.—Raymond Hood has just designed a house for a client, and has given the client exactly what he wanted. Said client happens to be Joseph Medill Patterson, one of the owners of the *Chicago Tribune*, and the *Daily News* in New York. Mr. Patterson had complained that in building several other homes he had never been permitted to have what he wanted; either his wife or one of the neighbors' wives explained how the house could be improved, and succeeded in having the drawings made in that way. This time Mr. Patterson had his own unobstructed way with his architect. Having put together the various requirements without regard for symmetry or any other consideration excepting functionalism and comforts, the result was a bit startling on the exterior. Therefore, it was decided to camouflage it. The brick exterior was painted in pastel shades to blend in with the autumn coloring of the trees and shrubbery. I told Hood that it looked as if it had been "dictated but not read."

CONTACTS

DEVOTED TO A BETTER UNDERSTANDING OF THE BUSINESS SIDE
OF ARCHITECTURE AND ITS RELATION TO THE INDUSTRIES

A New Type of Construction

THE TRAVEL AND TRANSPORT BUILDING FOR THE
CHICAGO WORLD'S FAIR OF 1933

By *E. C. Rothwell*

Detroit Steel Products Company

Editor's Note: Mr. Rothwell's article is supplemented by portions of a description of this building presented to the Western Society of Engineers by Clarence W. Farrier, Assistant Director of Works for the Fair, and Bert M. Thorud, Structural Engineer for the Fair.

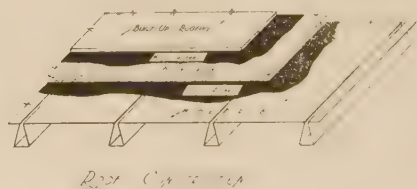
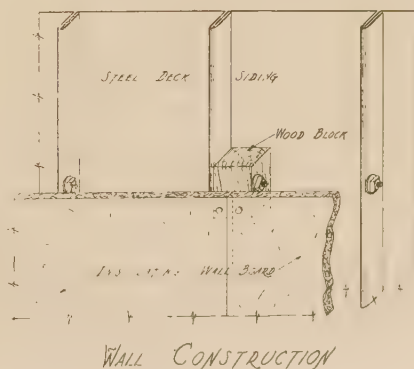
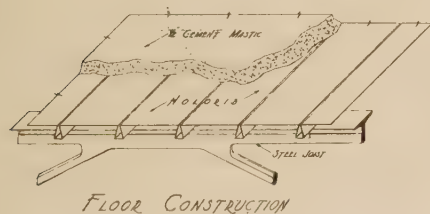


addition to that, a large open structure in which practically a full-sized model of a steamship could be built. As you come in the entrance you will appear to be coming on to a dock and you cross the gangplank onto the model of the steamship. That requires a high ceiling which could be constructed with a cyclorama for proper lighting effects to create a spectacular outdoor effect.

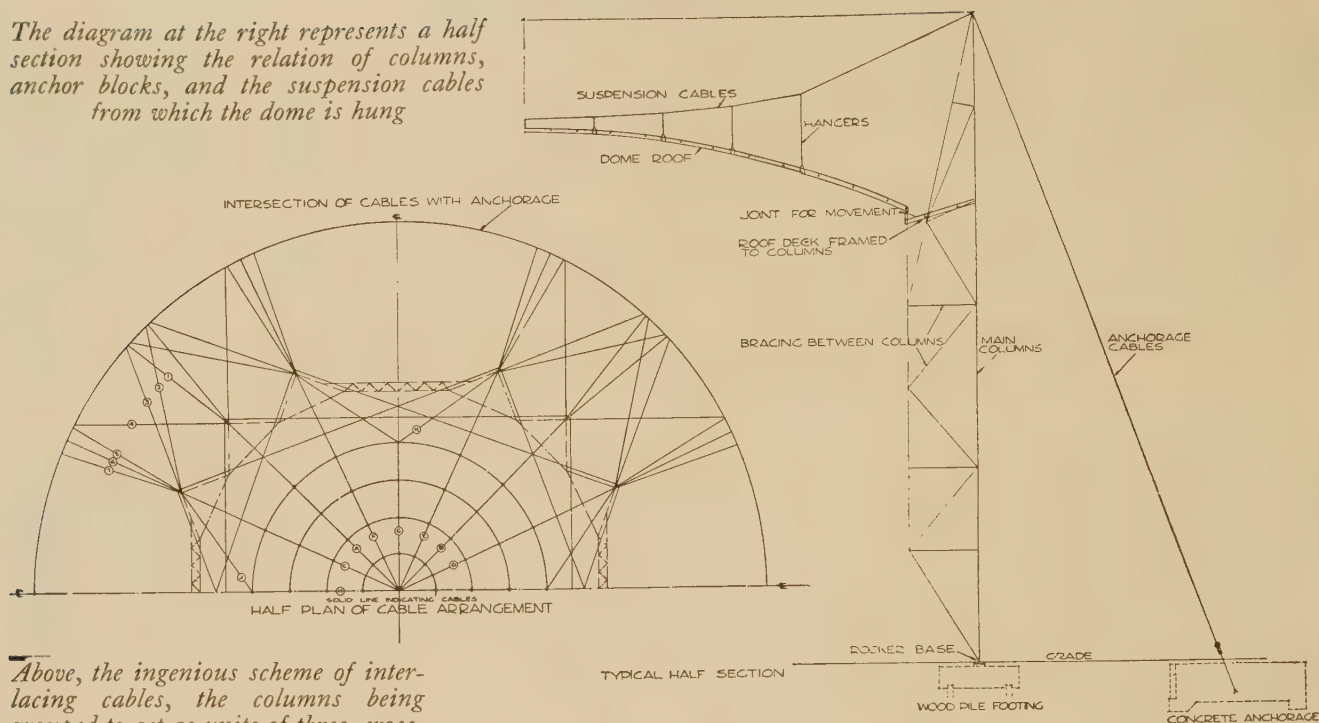
A third element of the building is a very large room in which the director wanted to show locomotives, starting with the early locomotives and showing the development down to the latest one in the centre. The natural habitat of the locomotive at rest is in a roundhouse and it was

desired to reproduce one inside this building. This required a round building 300 feet in diameter. It was hoped to have a rather high ceiling over the centre so as to be able to create dramatic lighting effects. It was essential to the solution of the problem that this large room be free from columns.

The obvious solution, of course, was to design some sort of steel dome of trusses. However, when one depends upon compression in steel over a long span there is a very heavy weight of steel required to merely hold up the trusses. No matter how light you make the roof, the trusses are very heavy simply to hold themselves. Going back to the old story about a piano wire holding two thousand pounds in tension, but not supporting its own weight in compression, a solution was attempted using a maximum of tension in the steel supporting the roof of this large room. This idea has been used for centuries in suspension bridges. The design developed used columns from which were suspended a cable network, suspending the roof system by tie rods. The architects, working on this basis, developed the outside of the dome into a series of triangular surfaces, twelve in number. Their triangular surfaces made possible the construction of heavy columns braced by a semi-truss arrangement in a vertical position to help maintain the stiffness of the column, and interlacing to make the towers act as units in groups of



The diagram at the right represents a half section showing the relation of columns, anchor blocks, and the suspension cables from which the dome is hung

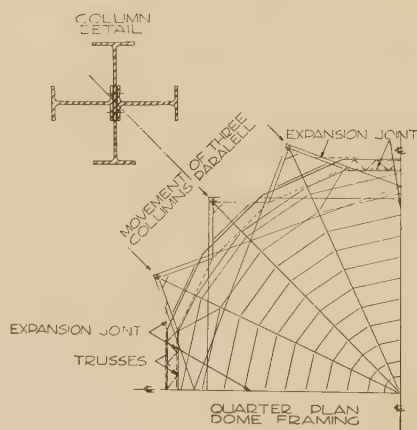


Above, the ingenious scheme of inter-lacing cables, the columns being grouped to act as units of three, cross-connected to the anchorages for wind bracing

three. From these towers the cables run down the outside in an interlacing pattern and are anchored to the very large weights put down in the ground.

The other cables are placed across, coming together in a criss-cross in the centre, and the roof is merely suspended by short steel rods from the cable network. The actual roof itself is a very light steel framework which is very easily fabricated. It can be erected with ordinary block and tackle hung from the cables themselves and the whole thing bolted together and gradually built up in place. A steel deck goes on top of this structure and a built-up roof on top of that.

The floor construction consists of Kalman joists, 27 inches apart; over these joists will be 22-gauge Holorib floor deck, consisting of steel sheets with a covering width of $16\frac{1}{4}$ inches. These sheets are fabricated with triangular ribs running longitudinally, $\frac{3}{4}$ inch deep, spaced $3\frac{3}{4}$ inches on centres. A pronged clip is used to fasten the sheet to the purlins, this clip piercing the sheet and being then bent over. There are three clips per sheet per purlin. All end-laps are interlocked to a depth of 3 inches and the interlocking takes place directly over the top flange of the joists. This results in



The design had to provide for vertical movement of the roof structure and horizontal movement in the column structure

a very rigid floor which is capable of sustaining, without deflection or without appreciable spring, loads far in excess of the requirement of 70 pounds per square foot. The floor proper will be a special mastic construction covering to a depth of $\frac{3}{4}$ inch. This mastic is composed of an asphalt cement of exceptional durability, which combines resiliency with strength.

The roof deck is fabricated from 24-gauge Holorib sheets, each $16\frac{1}{4}$ inches wide, with $\frac{3}{4}$ -inch triangular ribs spaced $3\frac{1}{4}$ inches on centres. These deck plates are also clipped to the purlins in the same manner as the floor deck. The joists are spaced

3 feet 7 inches on centres. Two $\frac{1}{2}$ -inch thicknesses of insulation board applied in broken-joint construction will be cemented to the steel roof deck in hot asphalt and a built-up four-ply roof applied over this. The insulation requirements of the roof have been made rather strict to eliminate any possibility of condensation forming which would eventually drip on the exhibits below.

The side-wall construction consists of single sheets 6 inches wide rolled from cold-rolled strip steel. These are fabricated in lengths ranging from 27 to 60 feet. The steel sheathing of 20-gauge material has a U-shaped rib. The sheets interlock with the flanged edges of the parallel sheets and are further bolted together, the bolt carrying a wood nailing-block on the inside. These nailing-blocks provide a firm anchorage for the insulating board which will form the interior walls of the building. This assembly is rattle-proof and weather-tight.

The rapidity with which the entire job is going forward calls for close co-ordination among the general contractor, the steel erectors, and the manufacturers. It is anticipated that the entire job will be completed, as far as the roof deck, floor, and side-wall construction is concerned, before this issue of ARCHITECTURE is published.



ARCHITECTURE'S PORTFOLIO OF BANKING-ROOM CHECK DESKS

THE FIFTY-FIRST IN A SERIES OF COLLECTIONS
OF PHOTOGRAPHS ILLUSTRATING VARIOUS MINOR
ARCHITECTURAL DETAILS

Forthcoming Portfolios will be devoted to the following subjects: Second-Story Porches (February), Clock Towers (March), Altars (April), Garage Doors (May), Mail-Chute Boxes (June), and Weather-Vanes (July). Photographs showing interesting examples under any of these headings will be welcomed by the Editor, though it should be noted that these respective issues are made up a month in advance of publication dates.

❖ ❖ ❖ *Subjects of Previous Portfolios* ❖ ❖ ❖

1926-27

DORMER WINDOWS
SHUTTERS AND BLINDS
ENGLISH PANELLING
GEORGIAN STAIRWAYS
STONE MASONRY TEXTURES
ENGLISH CHIMNEYS
FANLIGHTS AND OVERDOORS
TEXTURES OF BRICKWORK
IRON RAILINGS
DOOR HARDWARE
PALLADIAN MOTIVES
GABLE ENDS
COLONIAL TOP-RAILINGS
CIRCULAR AND OVAL WINDOWS

1928

BUILT-IN BOOKCASES
CHIMNEY TOPS
DOOR HOODS
BAY WINDOWS
CUPOLAS
GARDEN GATES
STAIR ENDS
BALCONIES
GARDEN WALLS
ARCADES
PLASTER CEILINGS
CORNICES OF WOOD

1929

DOORWAY LIGHTING
ENGLISH FIREPLACES
GATE-POST TOPS
GARDEN STEPS
RAIN LEADER HEADS
GARDEN POOLS
QUOINS
INTERIOR PAVING
BELT COURSES
KEYSTONES
AIDS TO FENESTRATION
BALUSTRADES

1930

SPANDRELS
CHANCEL FURNITURE
BUSINESS BUILDING ENTRANCES
GARDEN SHELTERS
ELEVATOR DOORS
ENTRANCE PORCHES
PATIOS
TREILLAGE
FLAGPOLE HOLDERS
CASEMENT WINDOWS
FENCES OF WOOD
GOTHIC DOORWAYS



State Bank and Trust Company, New York. Dennison & Hiron; executed by Sexauer & Lemke, Inc.

Integrity Trust Co., Philadelphia. Paul P. Cret; Wm. H. Jackson Co.



Bowery Savings Bank, New York. York & Sawyer; executed by William H. Jackson Company

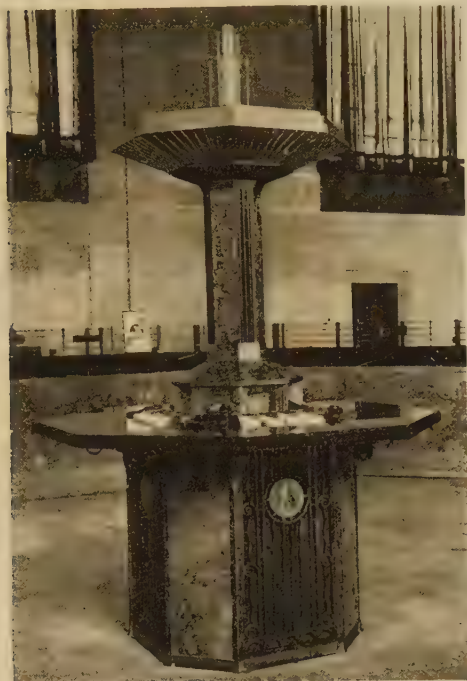
Union Trust Company, Detroit, Mich. Smith, Hinchman & Grylls; executed by The Gorham Company



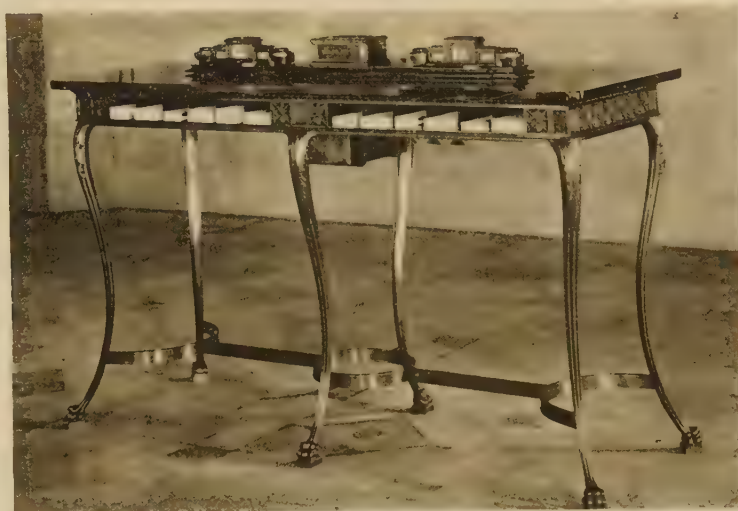
Bank of New York and Trust Company, New York. Benjamin W. Morris; executed by Oscar B. Bach



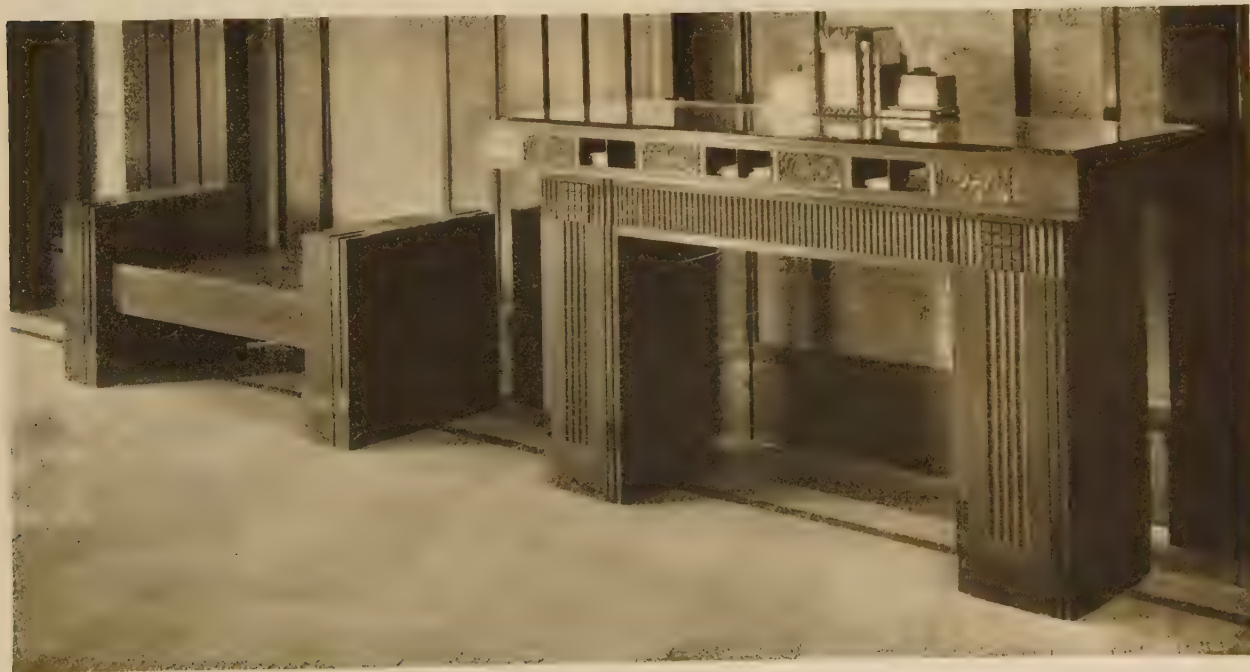
First Nat'l Bank, Greenfield, Mass. Hirons & Mellor; Sexauer & Lemke



First National Bank, Wichita, Kans. Richards, McCarty & Bulford; executed by General Bronze Corporation



Security First National Bank, Los Angeles, Calif. Morgan, Walls & Clements



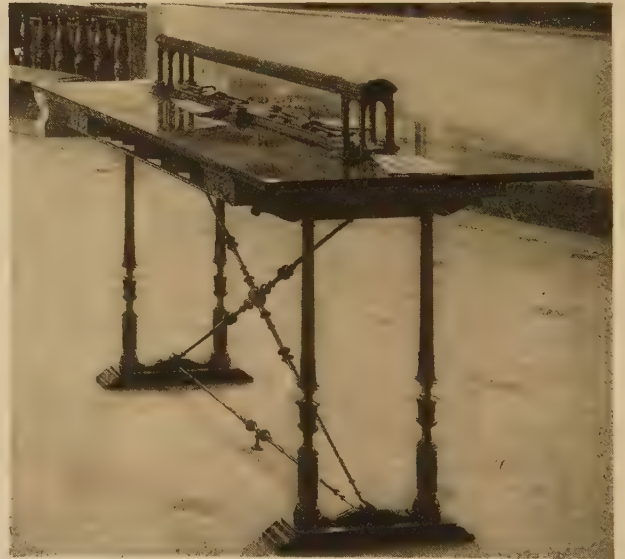


*Packard Building,
Philadelphia, Pa. Rit-
ter & Shay; designed
and executed by Samuel
Yellin*

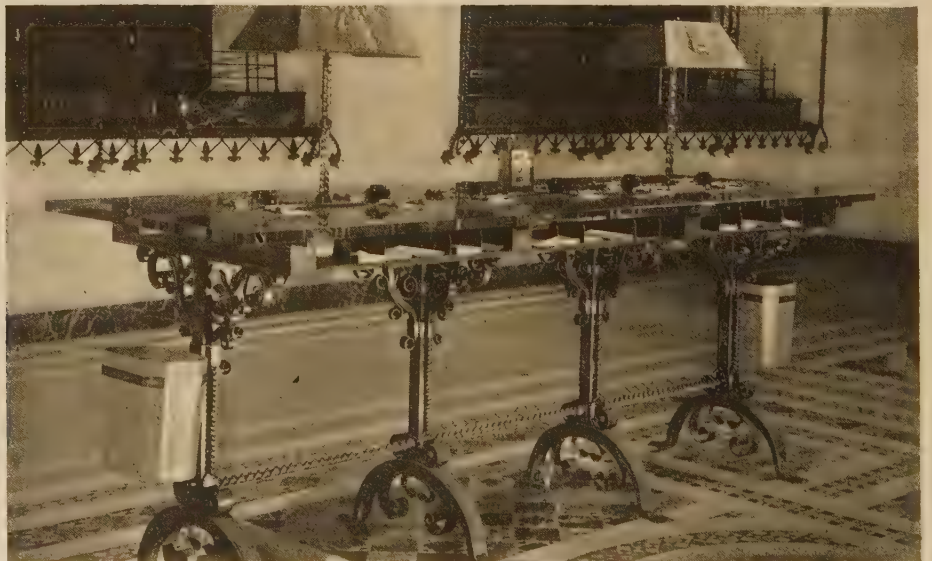
*Essex County Trust
Company, East Or-
ange, N. J. Dennison
& Hirons*



*Bank of Hollywood,
Hollywood, Calif.
Aleck Curlett*



*Baltimore Trust Com-
pany, Baltimore, Md.
Taylor & Fisher; ex-
ecuted by Samuel Yel-
lin*



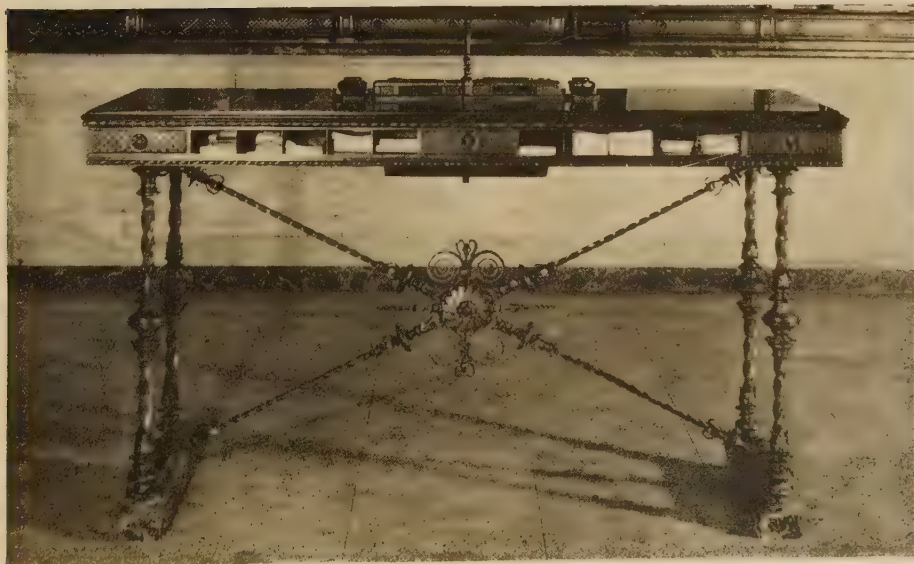
*First National Bank
and Trust Company,
Hamilton, O. Childs
& Smith*



*Rhode Island Hospi-
tal Trust Company,
Providence, R. I.
York & Sawyer; exe-
cuted by The Gorham
Company*



*First State Bank, De-
troit, Mich. Albert
Kahn*



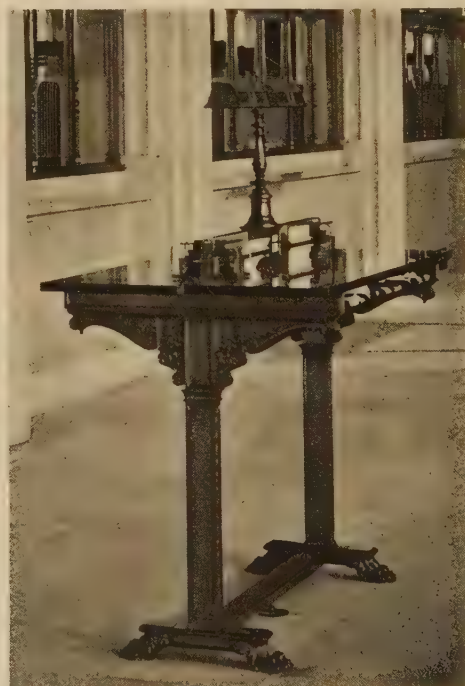
*Griswold Bank, De-
troit, Mich. Smith,
Hinchman & Grylls;
executed by General
Bronze Corporation*



*Peoples-Pittsburgh Trust Company,
Pittsburgh, Pa. Press C. Dowler*



*Fidelity Title and Trust Company,
Pittsburgh, Pa. Rutan & Russell; exe-
cuted by John Williams, Inc.*



*Nat'l City Bank, N. Y. C. McKim,
Mead & White; Wm. H. Jackson Co.*

*Bank of the Manhattan Co., N. Y. C.
H. Craig Severance, Yasuo Matsui;
Wm. H. Jackson Co.*



Beverly Hills Savings Bank, Beverly Hills, Calif. Morgan, Walls & Clements

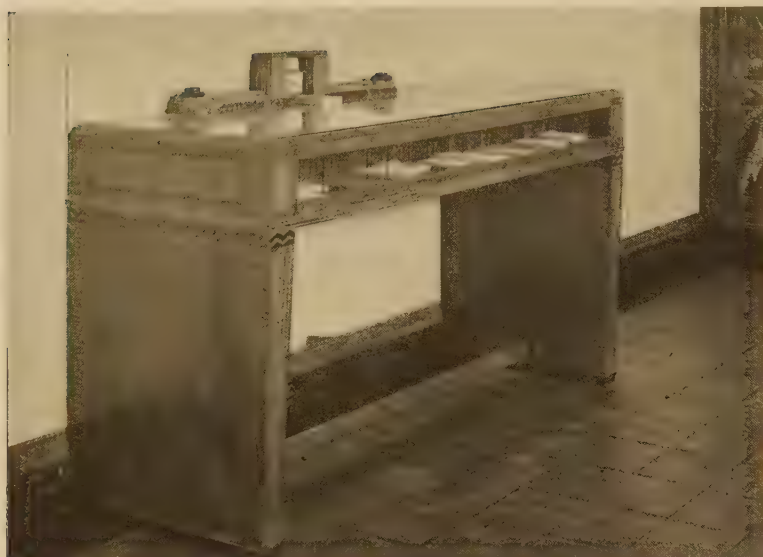
Merchants National Bank, Jersey City, N. J. Alfred C. Bossom; executed by The Gorham Company



Irving Trust Company, New York. Starrett & Van Vleck; executed by Sexauer & Lemke, Inc.



First Nat'l Bank, Kansas City. Wight & Wight; Art Metal Construction Co.

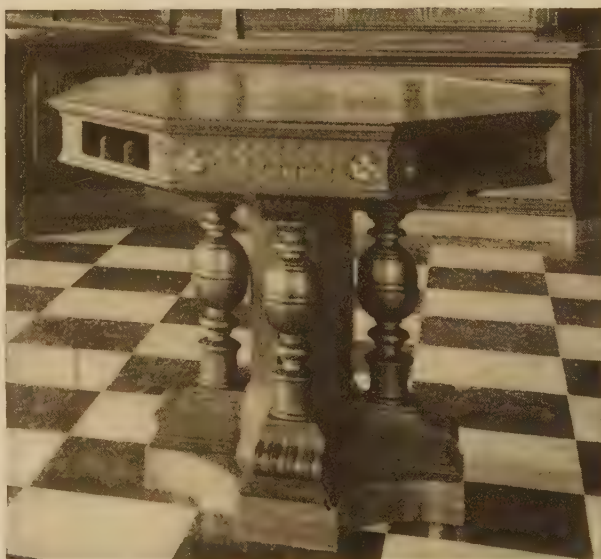


Security First National Bank, Los Angeles, Calif. Morgan, Walls & Clements



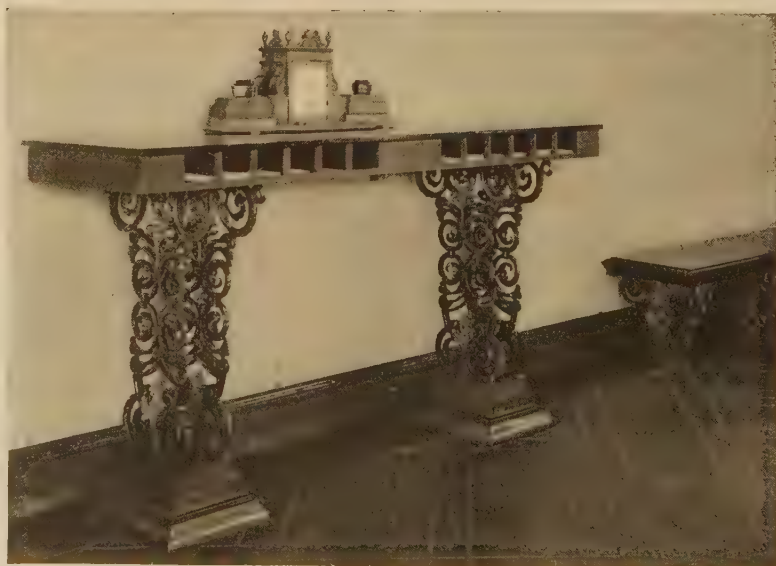
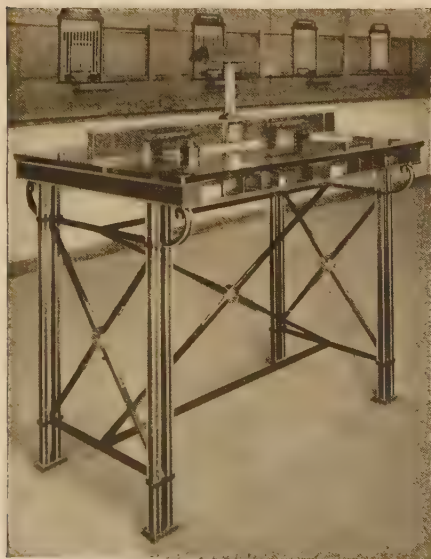
Commonwealth Trust Company, Pittsburgh, Pa. F. J. Osterling; executed by John Williams, Inc.

Bankers Trust Company, Detroit, Mich. Smith, Hinchman & Grylls



National City Bank, Brooklyn, N. Y. Walker & Gillette; executed by Superb Bronze & Iron Company

Security First National Bank, Westwood, Calif. Morgan, Walls & Clements





*West Side Savings
Bank, New York.
Halsey, McCormack & Helmer,
Inc.; executed by
Oscar B. Bach*



*Bank of Amer-
ica, San Clemente,
Calif. Virgil
Westbrook*



*Security Trust and
Savings Bank, Los
Angeles, Calif.
Morgan, Walls &
Clements*

*Security Trust and
Savings Bank, San
Pecho, Calif. Al-
fred F. Priest*



*Integrity Trust
Company, Phila-
delphia, Pa. Paul
P. Cret*



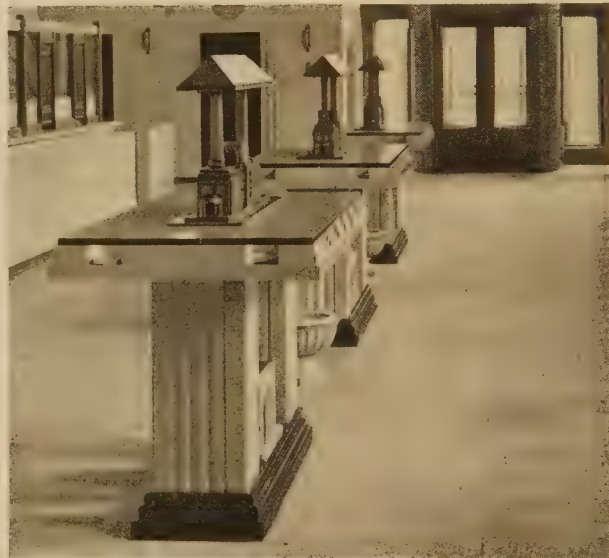


*Federal Reserve Bank,
New York. York &
Sawyer; designed and
executed by Samuel
Yellin*

*Dollar Savings and
Trust Company, Pitts-
burgh, Pa. Press C.
Dowler*

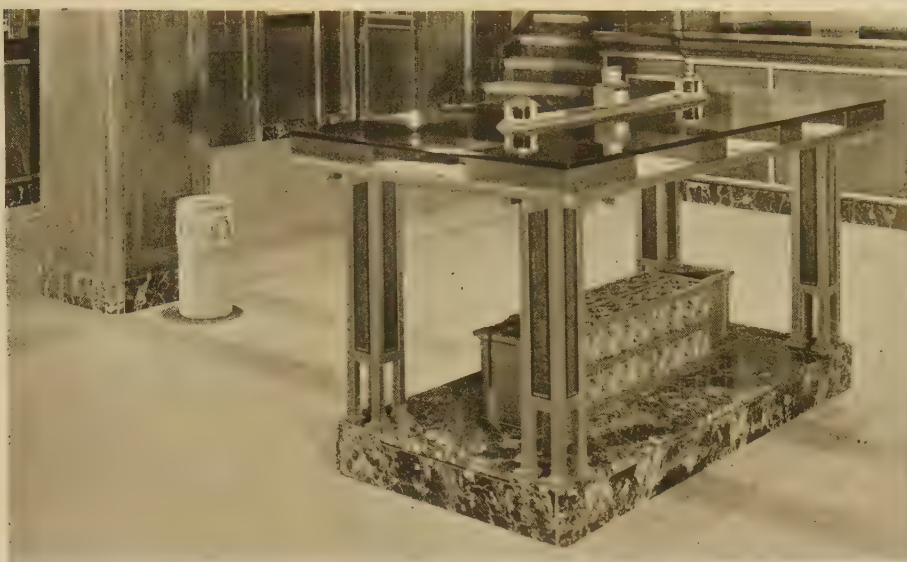


*Ridgewood Savings
Bank, Brooklyn, N.
Y. Halsey, McCor-
mack & Helmer,
Inc.; executed by
William H. Jackson
Company*



*Peoples National Bank,
Brunswick, Md. Rob-
ert L. Harris; executed
by Art Metal Con-
struction Company*

Los Angeles First National Bank, Hollywood, Calif. Meyer & Holler



Holmesburg Trust Company, Holmesburg, Pa. Davis, Dunlap & Barney



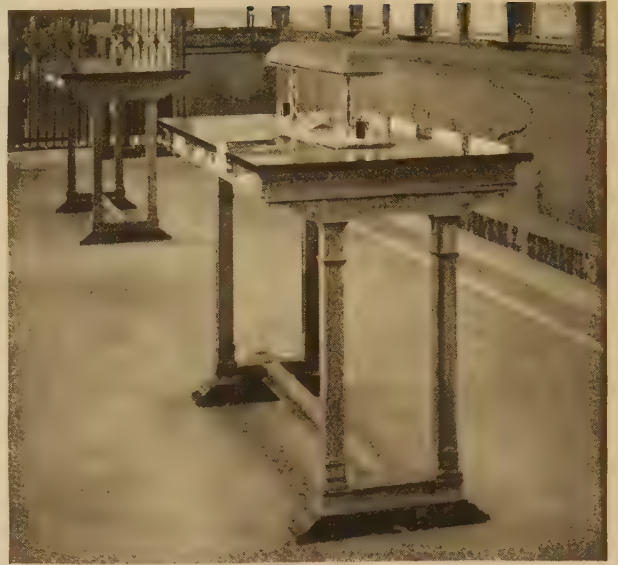
Southwest Bell Telephone Company, St. Louis, Mo. Mauran, Russell & Crowell; executed by General Bronze Corporation



Iron and Glass Dollar Savings Bank, Pittsburgh, Pa. Press C. Dowler



*First National Bank,
Salem, O. The Ows-
ley Company; exe-
cuted by Art Metal
Construction Com-
pany*



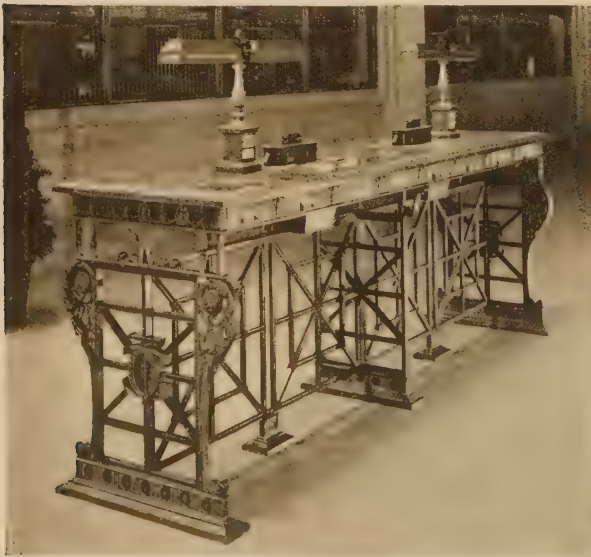
*Rye National Bank,
Rye, N. Y. Denni-
son & Hiron*



*Bank of Balboa, Bal-
boa, Calif. Morgan,
Walls & Clements*

*Guaranty Trust Com-
pany, New York.
Cross & Cross; exe-
cuted by The Gorham
Company*

*The Mechanics Bank,
New Haven, Conn.
Dennison & Hiron*

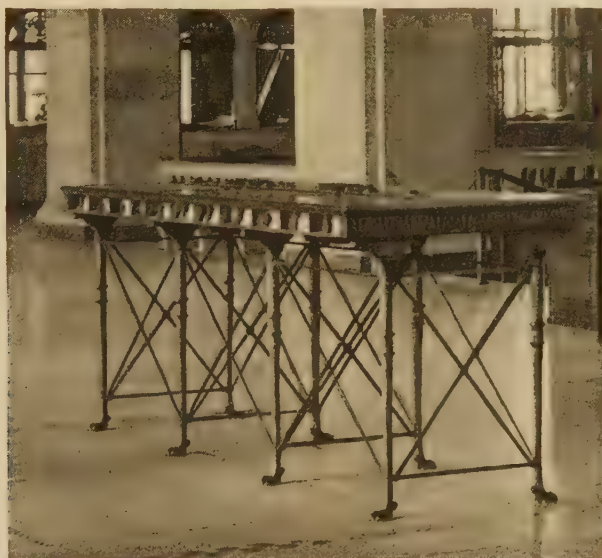




*Title Guarantee and
Trust Company, New
York. John Mead
Howells*



*National Bank of
Claysville, Pa. Press
G. Dowler*



*Royal Bank of Can-
ada, Montreal. York
& Sawyer; S. G.
Davenport, associate*

*Carrick Bank, Car-
rick, Pa. Charles R.
Geisler & J. B.
Smithyman; executed
by Art Metal Con-
struction Company*

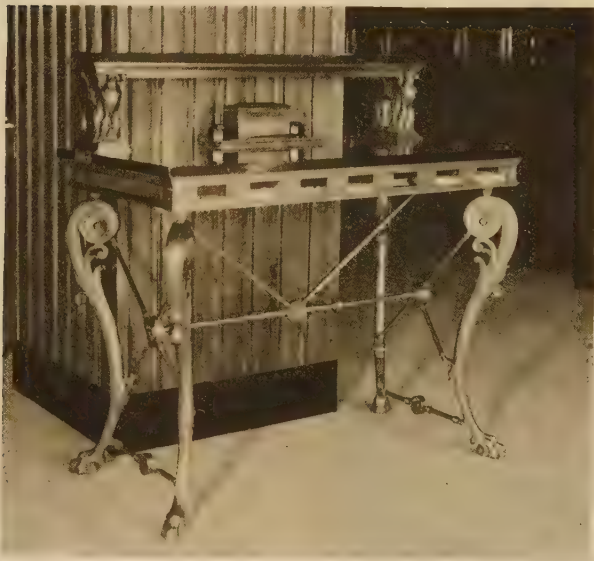
*Merchants National
Bank, Los Angeles,
Calif. Walker &
Eisen*





Brooklyn Trust Company, Brooklyn, N. Y. York & Sawyer; executed by William H. Jackson Company

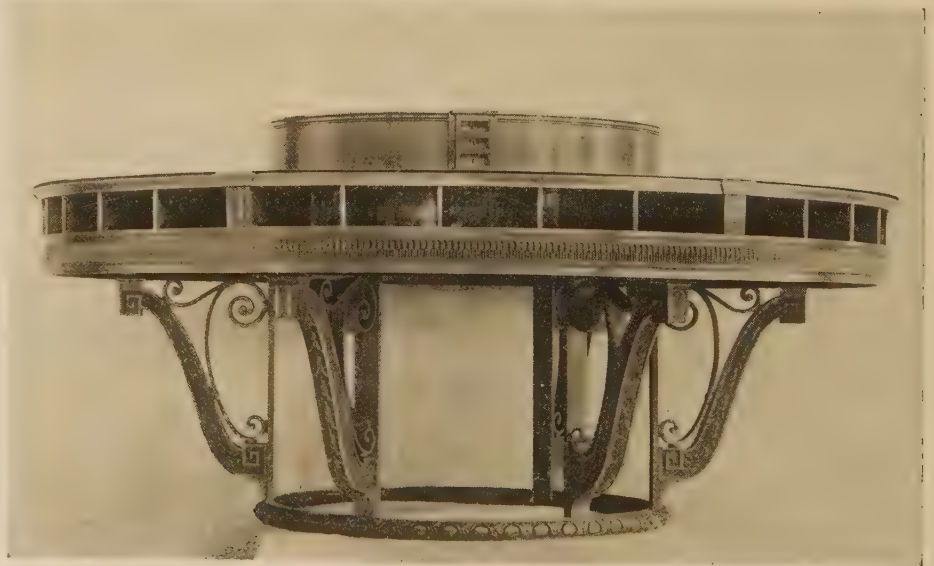
Bank of Charleroi and Trust Company, Charleroi, Pa. Hopkins & Dentz; executed by Art Metal Construction Company



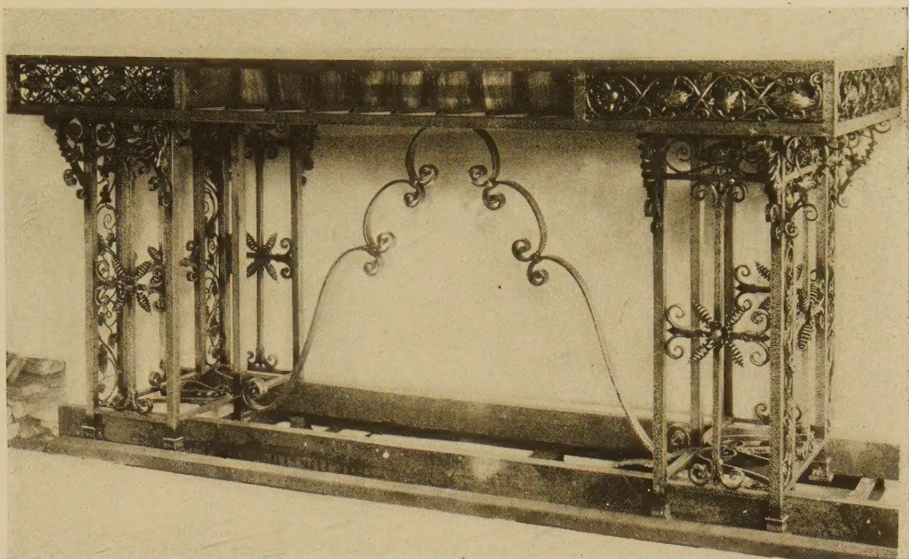
Midland Bank, Cleveland, O. Graham, Anderson, Probst & White; executed by General Bronze Corporation



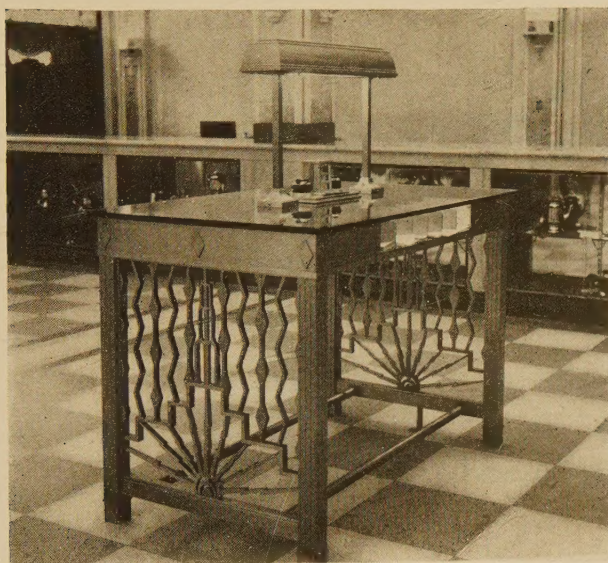
National Savings and Trust Company, Washington, D. C. Appleton P. Clark, Jr.; executed by The Gorham Company



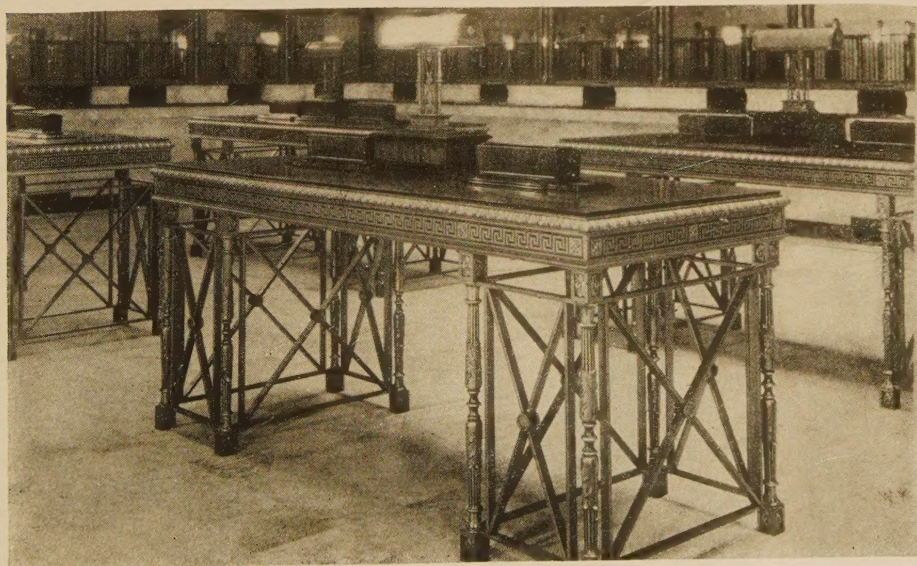
*Cleveland Trust Com-
pany, Cleveland, O.
Alfred G. Hall; exe-
cuted by General
Bronze Corporation*



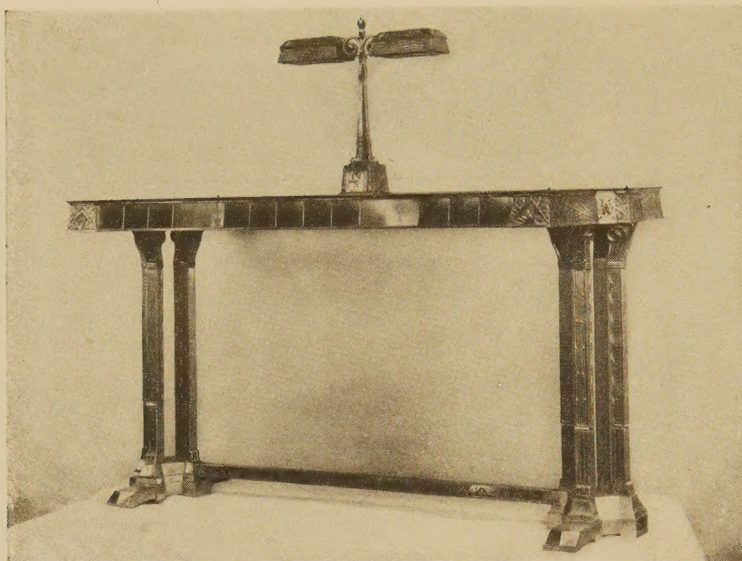
*Atlantic City Electric
Company, Atlantic
City, N. J. V. B.
Smith; executed by
Art Metal Construc-
tion Company*



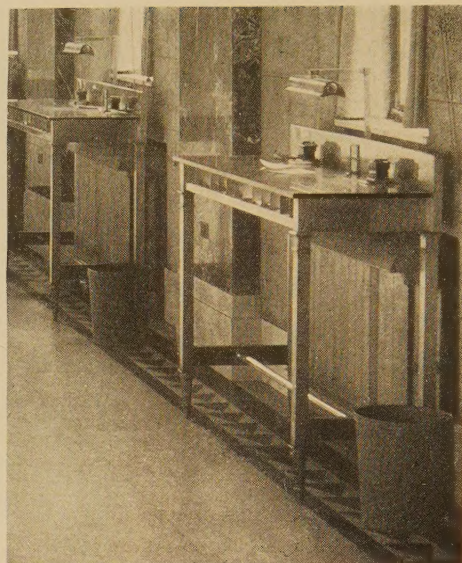
*Union Terminal
Bank, Cleveland, O.
Graham, Anderson,
Probst & White; exe-
cuted by General
Bronze Corporation*



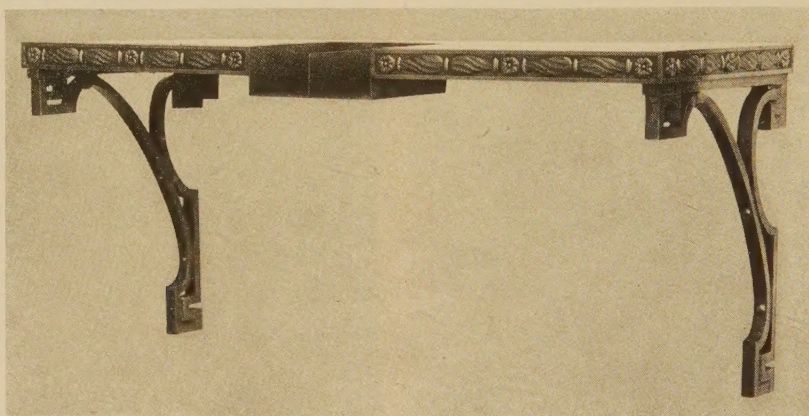
*Washington Park Na-
tional Bank, Chicago.
Albert A. Schwartz;
executed by Western
Architectural Iron
Company*



National Bank of Commerce, Houston, Tex. Kenneth Franzheim; executed by The Gorham Company



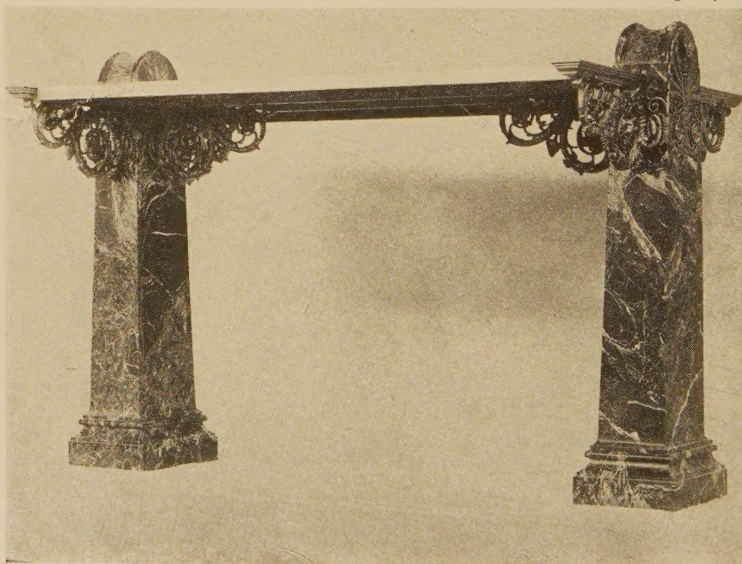
United States Trust Company, Newark, N. J. William E. Lehman



Citizens Bank of Weston, Weston, W. Va. Designed and executed by Samuel Yellin

Trust Company of New Jersey, Union, N. J. Clinton & Russell; executed by The Gorham Company

United States Post Office, Denver, Colo. Tracy, Swartwout & Litchfield; executed by The Gorham Company





Courtesy of Kennedy & Company

BUILDING A BABYLON, *from the etching by* MARTIN LEWIS

» ARCHITECTURE »